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NASA'S UNIVERSITY PROGRAM

ACTIVE GRANTS & RESEARCH CONTRACTS

(NASA-TM-X-69964) NASA'S UNIVERSITY
PROGRAM: ACTIVE GRANTS AND RESEARCH
CONTRACTS, FISCAL YEAR 1973 (NASA)
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OFFICE OF UNIVERSITY AFFAIRS
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
WASHINGTON, D. C. 20546

FISCAL YEAR 1973

I

IMPORTANT NOTICE

This report is compiled primarily from information obtained from two internal NASA sources:

1. "CASE Report on Support of Colleges and Universities" (NASA Form 1356).
2. "Individual Procurement Action Report" (NASA Form 507).

Therefore, other sources should be used for completing Forms 507 or 1356.

FOREWORD

The Office of University Affairs (OUA) is a focal point for NASA relationships with colleges and universities. This annual report is one means of documenting these relationships. Information contained in this document is designed to serve several purposes and a wide range of audiences from private individuals to NASA employees, but the emphasis is on NASA's sponsored efforts rather than on fiscal data. It is noted, however, that \$115 million was obligated during FY 73 for work in 280 institutions on some 2600 projects. A "User's Guide" is included to facilitate fullest use of the material related to the interests of any particular reader.

Information on obtaining reports resulting from these projects may be obtained from: NASA, Scientific and Technical Information Office, Code KS, Washington, D. C. 20546.

Any comments or inquiries regarding this document should be directed to:

Chief, Coordination Branch
Office of University Affairs, Code PY
National Aeronautics and Space Administration
Washington, D.C. 20546

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Appendix B – Cross Index by Field of Science and Engineering

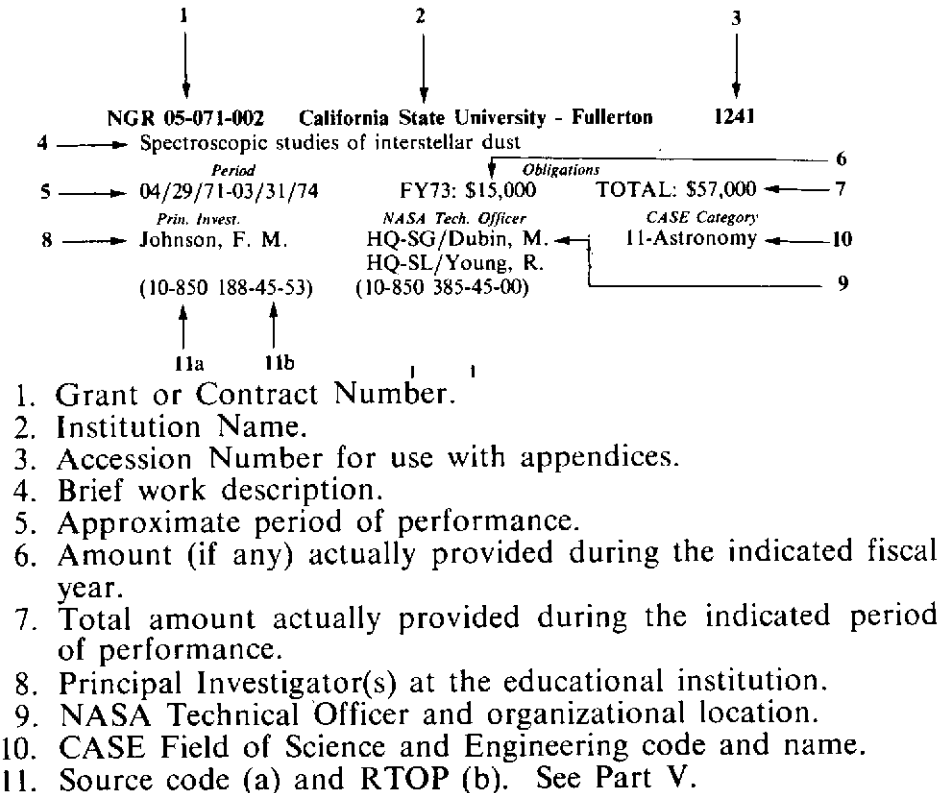
Appendix C – Cross Index by Technical Officer Location

Appendix D – Cross Index by RTOP

USER'S GUIDE

The University Program Report provides current information and related statistics for each grant or research contract active during the report period. The following guidance is provided as an aid to the reader in readily locating material of interest and in optimizing the use of this document.

I. Typical Citation



II. NASA Installations

NASA installations are included in the citation both as abbreviations (item 9) and as codes (items 11a). The following listing of installations will be useful to those desiring further information on specific projects.

Abbrev.	Code	Installation Name and Address	Telephone Number for Information
ARC	21	Ames Research Center NASA Moffett Field, CA 94035	415/965-5000
FRC	24	Flight Research Center NASA P.O. Box 273 Edwards, CA 93523	805/258-3311
GSFC	51	Goddard Space Flight Center NASA Greenbelt, MD 20771	301/982-5042
JPL	55	Jet Propulsion Laboratory 4800 Oak Grove Drive Pasadena, CA 91103	213/354-4321
JSC	72	Johnson Space Center NASA Houston, TX 77058	713/483-3111
KSC	76	Kennedy Space Center NASA Kennedy Space Center, FL 32899	305/867-7113
LARC	23	Langley Research Center NASA Langley Station Hampton, VA 23665	804/827-1100
LERC	22	Lewis Research Center NASA 21000 Brookpark Road Cleveland, OH 44135	216/433-4000
MSFC	62	Marshall Space Flight Center NASA Marshall Space Flight Center, AL 35812	205/453-2121

MTF	--	Mississippi Test Facility NASA Bay St. Louis, MS 39520	601/688-2211
WS	53	Wallops Station NASA Wallops Island, VA 23337	804/824-3411
WTR	--	Western Test Range P.O. Box 425 Lompoc, CA 93436	805/866-1611
HQ	10	NASA Headquarters Washington, DC 20546	202/755-2320

! The abbreviation for NASA Headquarters, HQ, usually carries a suffix, for example HQ-PY, which denotes a particular office and general area of responsibility. (PY is the Office of University Affairs.) A full listing of the suffix letters and information on NASA's organizational structure may be found in the NASA Headquarters Telephone Directory. (The Directory is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Single copy price: \$1.25; \$1.25 additional for foreign mailing.)

III. CASE Fields of Science and Engineering

The National Science Foundation (NSF) on behalf of the Committee on Academic Science and Engineering (CASE) of the Federal Council for Science and Technology (FCST) operates a government-wide system for collecting and analyzing data on support to colleges and universities. Participating agencies report annually to NSF which in turn issues *Support to Universities, Colleges and Selected Nonprofit Institutions*. The CASE Fields, used in the extensive tabulations contained in that document, form the only consistent classification system for government sponsored research. The fields are listed in full in Appendix B.

IV. Cross-Indexes

The cross-indexed Appendices are related to the citations by the accession number (item 3). The accession number has meaning only in this report; it is in no way permanently associated with, nor does it uniquely identify a grant or contract anywhere except in the present report.

Appendix A - Given only the grant or contract number this index enables the reader to locate the citation. The first page tells how to distinguish grants from contracts.

Appendix B - This index provides rapid access to all projects in a particular area of endeavor, as defined by the CASE Fields. The listing is also easily used to determine the institutions and principal investigators conducting NASA projects in a field.

Appendix C - The types of effort sponsored by each NASA installation may be determined from this index.

Appendix D - This index is included primarily for the convenience of internal NASA readers. However, the RTOP, per se, may be of considerable interest to external users. See V, below.

V. Source Code and RTOP

The last line of the citation (item 11) contains 1-3 sets of numbers in parenthesis. By interpreting the coding a great deal of additional information on a project may be obtained. The first set is current and is the most useful; the second and third sets, if present, generally represent historical data.

Each set of numbers is further divided into two groups separated by a blank space. The first group contains source coding, while the second is the "Research and Technology Operating Plan" (RTOP).

Source Coding (Item 11a)

The first two-digit number identifies the NASA installation (by the code given in II, above) which has most recently added funds to the project. Disagreement between this installation and the technical officer location usually indicates that responsibility for a project is being transferred.

The second number identifies the major NASA Program Office responsible for the research, as follows: 200-299, Office of Technology Utilization; 300-399, Office of University Affairs; 500-599, Office of Tracking and Data Acquisition; 600-699, Office of Applications; 700-799, Office of Aeronautics and Space Technology; 800-899, Office of Space Science; and 900-999, Office of Manned Space Flight.

RTOP (Item 11b)

The RTOP, "Research and Technology Operating Plan" number indicates a broad technical area in which NASA desires to achieve certain objectives. Numerous projects, conducted both in-house and out-of-house and with all classes of performers may contribute to the objective of a single RTOP. Detailed descriptions of the RTOPs, including names of responsible individuals and extensive cross-indexing are published annually. The current edition entitled *Research and Technology Operating Plan Summary* may be purchased from the National Technical Information Service (NTIS), Springfield, Virginia 22151, for \$3.00. (\$2.50 additional for Foreign mailing.)

NASA'S UNIVERSITY PROGRAM

ALABAMA

NGR 01-001-007 **Alabama A&M University** **1000**
Computer code for predicting neutron reaction cross sections and gamma ray spectrum in certain radiation shielding materials as well as in nitrogen & oxygen

<i>Period</i>	<i>Obligations</i>	
05/05/69-06/01/72	FY73:	TOTAL: \$60,799
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
George, M. C.	MSFC/Morgan, S. H., Jr.	13-Physics
	MSFC/Kent, M. I.	
(10-370 183-00-00)	(10-371 340-00-00)	(62-910 933-50-00)

NGR 01-001-013 **Alabama A&M University** **1001**
MHz shuttle, station and satellite communications analysis

<i>Period</i>	<i>Obligations</i>	
03/30/71-04/30/73	FY73:	TOTAL: \$37,698
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lowsine, L.	HQ-PY/Pohly, J. G.	41-Aero Engr
	MSFC/Reed, B. R.	
(62-920 982-52-00)	(62-920 976-30-00)	(10-371 340-00-00)

NGR 01-001-014 **Alabama A&M University** **1002**
Ground truth documentation to facilitate use of remote sensing in resource planning

<i>Period</i>	<i>Obligations</i>	
06/25/71-04/30/73	FY73:	TOTAL: \$40,221
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sharma, G. C.	MSFC/McDonough, G.	
	MSFC/Paludan, T.	39-Env Sci, NEC
(10-371 340-00-00)		

NGR 01-001-017 **Alabama A&M University** **1003**
Development of an adhesion criterion in gas solid interface

<i>Period</i>	<i>Obligations</i>	
03/13/72-05/31/73	FY73:	TOTAL: \$15,969
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
George, M. C.	HQ-PY/Pohly, J. G.	13-Physics
	MSFC/Peters, P. N.	
(10-371 340-00-00)		

NGR 01-001-018 **Alabama A&M University** **1004**
Investigation of water quality parameters and selected points on the Tennessee River

<i>Period</i>	<i>Obligations</i>	
08/03/72-05/01/73	FY73: \$19,690	TOTAL: \$19,690
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Manager, M. C.	HQ-PY/Pohly, J. H.	39-Env Sci, NEC
	MSFC/Kent, M. I.	
(10-371 340-00-00)		

NGR 01-001-020 **Alabama A&M University** **1005**
Degradation effect on space communication and energy transmission by laser beams due to the variation of atmospheric refractive index

<i>Period</i>	<i>Obligations</i>	
09/07/72-08/31/74	FY73: \$31,139	TOTAL: \$31,139
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, C. T.	HQ-PY/Pohly, J. G.	13-Physics
	MSFC/Kurtz, R. L.	
(10-371 340-00-00)		

NGR 01-001-021 **Alabama A&M University** **1006**
Performance analysis & preliminary system configuration

<i>Period</i>	<i>Obligations</i>	
03/05/73-04/30/74	FY73: \$21,491	TOTAL: \$21,491
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weathers, G. D.	HQ-PY/Pohly, J. G.	46-Mech Engr
	MSFC/Lowrey, D. O.	
(10-371 340-00-00)		

NGR 01-001-023 **Alabama A&M University** **1007**
Development of remote sensing applications for natural resource study and management

<i>Period</i>	<i>Obligations</i>	
06/13/73-06/14/74	FY73: \$23,278	TOTAL: \$23,278
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Golden, M. S.	HQ-PY/Pohly, J. G.	39-Env Sci, NEC
	MSFC/Derington, J. C.	
(10-371 340-00-00)	(62-680 160-75-98)	

NAS 8-28058 **Athens College** **1008**
Chemical analysis of outgassing contaminant on spacecraft surfaces

<i>Period</i>	<i>Obligations</i>	
10/27/71-01/26/74	FY73: \$17,250	TOTAL: \$27,608
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McNutt, R. C.	MSFC/Erery, S. G.	13-Physics
	MSFC/Williams, J. R.	
(62-960 964-50-00)	(62-910 933-50-00)	(62-740 114-03-07)

NAS 8-20163 **Auburn University** **1009**
Study in digitized servo-electronics for use in gyro stabilized loops of a stabilized platform system

<i>Period</i>	<i>Obligations</i>	
06/17/65-10/15/72	FY73:	TOTAL: \$269,314
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nagle, H. T., Jr.	MSFC/Doran, B. J.	45-Elec Engr
	MSFC/Jones, C. S.	
(62-910 933-35-00)	(62-750 125-00-00)	(62-750 125-17-14)

NAS 8-20765 **Auburn University** **1010**
Frequency modulated (FM) telemetry systems

<i>Period</i>	<i>Obligations</i>	
05/22/67-03/15/74	FY73: \$25,000	TOTAL: \$216,988
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Irwin, J. D.	MSFC/Emens, F. H.	45-Elec Engr
James, S.	MSFC/Maynard, E.	
(62-500 150-22-03)		

NAS 8-24818 **Auburn University** **1011**
Television broadcast relay system analytical studies

<i>Period</i>	<i>Obligations</i>	
06/16/69-09/15/72	FY73:	TOTAL: \$50,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Graf, E. R.	MSFC/Saunders, G. H.	45-Elec Engr
	MSFC/Mixon, W. R.	
(62-680 160-00-00)	(62-620 164-21-56)	

NAS 8-26190 **Auburn University** **1012**
Study of meteor trail radiation

<i>Period</i>	<i>Obligations</i>	
06/30/70-09/01/71	FY73:	TOTAL: \$21,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harwell, K. E.	MSFC/Naumann, R. J.	11-Astronomy
	MSFC/Clifton, S.	
(62-742 124-00-00)		

NASA'S UNIVERSITY PROGRAM
ALABAMA (Continued)

NAS 8-26193 Auburn University 1013
Research work pertaining to telemetry measuring and radio frequency systems
Period *Obligations*
06/18/70-06/17/74 FY73: TOTAL: \$120,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Honnell, M. A. MSFC/Lowery, D. O. 45-Elec Engr
MSFC/Thomas, L. J.
(62-910 933-50-00) (62-500 150-22-17) (62-500 150-00-00)

NAS 8-26579 Auburn University 1014
Study of thermal conductivity of heterogeneous mixtures
Period *Obligations*
10/23/70-10/23/73 FY73: TOTAL: \$40,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Vachon, R. I. MSFC/Jones, B. P. 13-Physics
MSFC/Miller, E. R.
(62-740 114-03-25) (62-740 129-03-25)

NAS 8-26580 Auburn University 1015
Reaction control system studies
Period *Obligations*
11/17/70-09/15/73 FY73: TOTAL: \$85,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Boland, J. S. MSFC/Polites, M. E. 45-Elec Engr
MSFC/Brown, H. E.
(62-980 908-52-08) (62-980 908-51-00)

NAS 8-26752 Auburn University 1016
A study of power conditioning and power distribution
Period *Obligations*
12/29/70-12/30/72 FY73: TOTAL: \$20,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Honnell, M. A. MSFC/Graves, J. R. 45-Elec Engr
MSFC/Lanier, J. R.
(62-980 908-51-00)

NAS 8-26930 Auburn University 1017
Advanced computer system studies and development
Period *Obligations*
03/29/71-05/28/74 FY73: TOTAL: \$55,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Irwin, J. D. MSFC/White, J. B. 45-Elec Engr
MSFC/Yearwood, H. E.
(62-830 180-00-00) (62-910 933-50-00)

NAS 8-27664 Auburn University 1018
Study of effects of uncertainties on comets and asteroid encounter
Period *Obligations*
06/08/71-09/15/73 FY73: TOTAL: \$70,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bennett, A. G. MSFC/Hethcoat, J. P. 42-Astro Engr
(62-840 186-68-64) (62-830 180-00-00) (62-830 180-17-50)

NAS 8-27827 Auburn University 1019
Multivariable control theory applied to hierarchical altitude control for planetary spacecraft
Period *Obligations*
07/23/71-12/22/72 FY73: TOTAL: \$20,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Russell, D. W. MSFC/Borelli, M. T. 45-Elec Engr
Boland, J. S., III MSFC/Carroll, S. N.
(62-840 186-68-64)

NAS 8-28110 Auburn University 1020
Dynamic analysis and synthesis control system for a spacecraft to rendezvous with comets and asteroids
Period *Obligations*
11/18/71-11/17/72 FY73: TOTAL: \$30,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Cochran, J. E. MSFC/Waites, H. B. 42-Astro Engr
MSFC/Justice, D. W.
(62-840 186-68-64)

NAS 8-28262 Auburn University 1021
Investigation of choice of programing forms for digital controllers operating in open and closed loop control systems
Period *Obligations*
01/10/72-06/15/73 FY73: TOTAL: \$8,100
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Phillips, C. L. MSFC/Vallely, D. P. 45-Elec Engr
MSFC/Justice, D. W.
(62-980 908-51-08)

NAS 8-28366 Auburn University 1022
Study of orbital perturbing forces
Period *Obligations*
01/24/72-01/24/73 FY73: TOTAL: \$16,526
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fitzpatrick, P. M. MSFC/Holland, R. H. 13-Physics
MSFC/Naumann, R. J.
(62-840 186-68-64)

NAS 8-29852 Auburn University 1023
Investigation of problems involving calculation of space tog's position in an inertial coordinate system
Period *Obligations*
06/20/73-06/20/74 FY73: \$74,394 TOTAL: \$74,394
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Boland, J. S., III MSFC/Ellsworth, T. D. 49-Engr, NEC
MSFC/Wise, R. L.
(62-980 909-55-05)

NGR 01-003-008 Auburn University 1024
Computer techniques for multivariant function model generation emphasizing programs applicable to space vehicle guidance
Period *Obligations*
03/01/66-06/30/73 FY73: TOTAL: \$92,906
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shaw, W. A. JSC/Lewallen, J. M. 42-Astro Engr
(25-750 125-00-00) (72-750 125-00-00)

NGR 01-003-036 Auburn University 1025
A study of Hamilton-Jacobi theory for application to guidance
Period *Obligations*
03/18/69-09/30/72 FY73: TOTAL: \$18,884
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fitzpatrick, P. M. JSC/ 21-Mathematics
(72-750 125-00-00) (25-750 125-00-00)

NGT 01-003-001 Auburn University 1026
Training of graduate students in space-related science and technology
Period *Obligations*
03/15/63-08/01/72 FY73: TOTAL: \$827,700
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Parker, W. V. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NASA'S UNIVERSITY PROGRAM
ALABAMA (Continued)

NGT 01-003-044 Auburn University 1027
 Summer fellowship programs in engineering systems design

Period	Obligations	
12/16/69-03/31/74	FY73: \$126,825 TOTAL: \$449,211	
Prin. Invest.	NASA Tech. Officer	CASE Category
Vachon, R. I.	HQ-PY/Carter, C. H.	49-Engr, NEC

 (10-371 340-00-00)

NGT 01-003-045 Auburn University 1028
 Summer faculty fellowship program in aeronautics and space research

Period	Obligations	
12/16/69-03/31/74	FY73: TOTAL: \$240,420	
Prin. Invest.	NASA Tech. Officer	CASE Category
O'Brien, J. F.	HQ-PY/Carter, C. H.	49-Engr, NEC

 (10-370 181-00-00) (10-371 340-00-00)

NGR 01-007-001 Talladega College 1029
 Effect of surface conditions on work function of insulators and semiconductors

Period	Obligations	
07/31/69-09/30/73	FY73: TOTAL: \$62,621	
Prin. Invest.	NASA Tech. Officer	CASE Category
George, M. C.	HQ-PY/Pohly, J. G.	13-Physics

 (10-370 183-00-00) (10-371 340-00-00)

NGR 01-007-004 Talladega College 1030
 Strains produced in clean metallic thin films by a gaseous environment

Period	Obligations	
03/25/71-12/31/73	FY73: \$21,465 TOTAL: \$47,465	
Prin. Invest.	NASA Tech. Officer	CASE Category
Morrison, R. A.	HQ-PY/Carter, C. H.	13-Physics

 (10-371 340-00-00) MSFC/Horton, J.

NGR 01-005-003 Tuskegee Institute 1031
 Growth of insulating magnetic crystals involving second and third transition metal ions

Period	Obligations	
06/13/69-12/30/72	FY73: TOTAL: \$62,343	
Prin. Invest.	NASA Tech. Officer	CASE Category
Reams, F. M.	MSFC/Bannister, T. C.	13-Physics

 (10-370 183-00-00) (62-910 933-50-00) MSFC/Kent, M.

NGR 01-005-010 Tuskegee Institute 1032
 A study of coaxial-submerged free jet

Period	Obligations	
04/07/71-08/31/73	FY73: TOTAL: \$45,757	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lenzo, C. S.	MSFC/Guest, S. H.	41-Aero Engr

 (10-371 340-00-00) MSFC/Kent, M. I.

NGR 01-005-012 Tuskegee Institute 1033
 High temperature deformation of Bi2Te3

Period	Obligations	
04/07/71-11/30/73	FY73: \$20,984 TOTAL: \$41,532	
Prin. Invest.	NASA Tech. Officer	CASE Category
Terrill, G. R.	HQ-PY/Pohly, J. G.	45-Elec Engr

 (10-371 340-00-00) MSFC/Krupnick, A. C.

NGR 01-005-017 Tuskegee Institute 1034
 Advanced thermal control systems analysis

Period	Obligations	
06/30/72-08/31/73	FY73: TOTAL: \$24,800	
Prin. Invest.	NASA Tech. Officer	CASE Category
Sellers, J. P.	JSC/Fedderson, W. E.	46-Mech Engr

 (72-910 914-50-00)

NGR 01-010-001 University of Alabama - Birmingham 1035
 Model for origin and coevolution of genetic code and the process of protein synthesis

Period	Obligations	
05/09/73-05/31/74	FY73: \$21,000 TOTAL: \$21,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lacey, J. C., Jr.	HQ-SL/Young, R. S.	12-Chemistry

 (10-840 192-55-61)

NAS 8-24612 University of Alabama - Huntsville 1036
 Investigation of crystal growth in zero gravity environment

Period	Obligations	
06/18/69-06/01/72	FY73: TOTAL: \$94,969	
Prin. Invest.	NASA Tech. Officer	CASE Category
Davis, J. H.	MSFC/Kroes, R.	13-Physics

 (62-980 975-90-95) (62-742 124-00-00) (62-740 129-00-00) MSFC/Bannister, T. C.

NAS 8-24908 University of Alabama - Huntsville 1037
 Study of radiation environment in orbit of the Apollo applications satellites

Period	Obligations	
06/24/69-11/25/73	FY73: \$26,000 TOTAL: \$180,278	
Prin. Invest.	NASA Tech. Officer	CASE Category
Guenther, G. A.	MSFC/Parnell, T. A.	11-Astronomy

 (62-960 964-50-00) (62-910 933-50-00) MSFC/Oran, W. A.

NAS 8-24953 University of Alabama - Huntsville 1038
 Study of specific light output of CSi crystals

Period	Obligations	
06/26/69-12/31/73	FY73: \$26,995 TOTAL: \$222,859	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gregory, J. C.	MSFC/Parnell, T. A.	13-Physics

 (62-950 951-16-00) (62-910 933-50-00) (62-742 124-09-21) MSFC/Oran, W.

NAS 8-25055 University of Alabama - Huntsville 1039
 Behavior of dense plasma

Period	Obligations	
06/30/69-05/01/72	FY73: TOTAL: \$91,360	
Prin. Invest.	NASA Tech. Officer	CASE Category
Todd, F. C.	MSFC/Naumann, R.	13-Physics

 (62-910 933-50-00) (62-742 124-00-00) MSFC/Espy, P.

NAS 8-25101 University of Alabama - Huntsville 1040
 Electro-magnetofluid dynamic description of the in fall-impac model of the solar flare

Period	Obligations	
06/24/69-09/30/73	FY73: \$14,994 TOTAL: \$103,789	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wu, S. T.	MSFC/Hagyard, M.	13-Physics

 (62-960 996-00-00) MSFC/Jones, B. P.

NASA'S UNIVERSITY PROGRAM
ALABAMA (Continued)

NAS 8-25102 University of Alabama - Huntsville 1041			
Mathematical characterization of mechanical behavior of porous frictional granular media			
<i>Period</i>	<i>Obligations</i>		
06/24/69-11/30/72	FY73: TOTAL: \$119,685		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chung, T. J.	MSFC/Costes, N. C.	13-Physics	
(62-910 933-50-00)	MSFC/Peasley, Q. D.		
(62-910 914-40-00)			
NAS 8-25120 University of Alabama - Huntsville 1042			
Investigation of thallium whiskers study			
<i>Period</i>	<i>Obligations</i>		
06/26/69-12/01/71	FY73: TOTAL: \$59,982		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Davis, J. H.	MSFC/Kroes, R.	47-Materials Engr	
(62-910 933-50-00)			
NAS 8-25750 University of Alabama - Huntsville 1043			
In-flight atmospheric model criteria monograph			
<i>Period</i>	<i>Obligations</i>		
03/24/70-09/15/73	FY73: TOTAL: \$90,152		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wu, S. T.	MSFC/Devries, L. L.	49-Engr, NEC	
(62-742 124-12-11)	MSFC/Smith, R. E.		
(62-740 114-03-55)		(62-850 188-36-56)	
NAS 8-26055 University of Alabama - Huntsville 1044			
Program history of project Saturn			
<i>Period</i>	<i>Obligations</i>		
04/22/70-01/02/74	FY73: TOTAL: \$146,996		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Beltz, J. S.	MSFC/Sorensen, V. C.	73-History	
(62-910 933-50-00)	MSFC/Akens, D. S.		
NAS 8-26773 University of Alabama - Huntsville 1045			
Development of a computer simulation for damage behind a thermal protection system or meteoroid bumper			
<i>Period</i>	<i>Obligations</i>		
02/02/71-02/01/72	FY73: TOTAL: \$19,997		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Todd, F. C.	MSFC/Ruff, R. C.	21-Mathematics	
(62-980 908-52-38)			
NAS 8-26793 University of Alabama - Huntsville 1046			
Investigation of metallic whiskers			
<i>Period</i>	<i>Obligations</i>		
03/15/71-09/30/72	FY73: TOTAL: \$109,981		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Davis, J. H.	MSFC/Kroes, R. L.	13-Physics	
Castle, J. G., Jr.	MSFC/Lacy, L. L.		
(62-910 933-50-00)	(62-980 975-90-95)	(62-740 114-03-07)	
NAS 8-26795 University of Alabama - Huntsville 1047			
Investigation of seismic signals originated by large rocket firings			
<i>Period</i>	<i>Obligations</i>		
03/24/71-11/24/72	FY73: TOTAL: \$50,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McCarty, V.	MSFC/Dalins, I.	39-Env Sci, NEC	
(62-910 933-50-00)	MSFC/Stern, H. E.		
NAS 8-26991 University of Alabama - Huntsville 1048			
Metallurgical evaluation of wire reinforced refractory composites for space shuttle reuse			
<i>Period</i>	<i>Obligations</i>		
03/29/71-08/27/72	FY73: TOTAL: \$25,557		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Roy, U.	MSFC/Reese, O. Y.	47-Materials Engr	
(62-920 982-52-00)	(62-920 976-30-00)		
NAS 8-27181 University of Alabama - Huntsville 1049			
Mathematical research on spline functions (spline approximations)			
<i>Period</i>	<i>Obligations</i>		
03/25/71-08/01/73	FY73: TOTAL: \$51,163		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Horner, J. M.	MSFC/Jones, B. P.	13-Physics	
(62-910 933-50-00)			
NAS 8-27336 University of Alabama - Huntsville 1050			
Diffraction camera research			
<i>Period</i>	<i>Obligations</i>		
04/29/71-03/31/73	FY73: TOTAL: \$57,006		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gregory, J. C.	MSFC/Parnell, T. A.	13-Physics	
(62-810 195-00-00)	MSFC/Oran, W. A.		
(62-740 114-03-05)		(62-850 832-12-00)	
NAS 8-27792 University of Alabama - Huntsville 1051			
Thermal elastoplastic structural analysis of nonmetallic thermal protection systems			
<i>Period</i>	<i>Obligations</i>		
06/25/71-08/31/72	FY73: TOTAL: \$15,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chung, T. J.	MSFC/Zimmerman, C. R.	21-Mathematics	
(62-920 982-52-00)	MSFC/Young, R. L.		
(62-920 976-30-00)			
NAS 8-27809 University of Alabama - Huntsville 1052			
Superconducting compounds & alloys			
<i>Period</i>	<i>Obligations</i>		
06/29/71-10/31/73	FY73: \$29,981 TOTAL: \$72,281		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Otto, G. H.	MSFC/Lacy, L. L.	13-Physics	
(62-980 975-90-95)	MSFC/Urban, E. W.		
(62-950 951-16-00)		(62-910 933-50-00)	
NAS 8-28071 University of Alabama - Huntsville 1053			
Leed-Auger studies of contamination on solid surfaces			
<i>Period</i>	<i>Obligations</i>		
10/29/71-03/31/73	FY73: TOTAL: \$17,820		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gregory, J. G.	MSFC/Peters, P. N.	13-Physics	
(62-740 114-03-07)			
NAS 8-28097 University of Alabama - Huntsville 1054			
Triggering mechanisms for solar flares			
<i>Period</i>	<i>Obligations</i>		
12/06/71-07/05/73	FY73: TOTAL: \$20,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wu, S. T.	MSFC/Hagyard, M.	11-Astronomy	
(62-910 933-50-00)	MSFC/Jones, B. P.		

NASA'S UNIVERSITY PROGRAM **ALABAMA (Continued)**

NAS 8-28112 **University of Alabama - Huntsville** **1055**
Design, construct test and evaluate a zero gravity experiment
Period *Obligations*
11/01/71-05/01/73 FY73: TOTAL: \$15,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Walter, H. MSFC/Boese, A. 47-Materials Engr
MSFC/Aldrich, B. R.
(62-910 933-50-00)

NAS 8-28248 **University of Alabama - Huntsville** **1056**
Environmental dynamics at orbital altitudes
Period *Obligations*
01/24/72-09/30/74 FY73: \$55,000 TOTAL: \$104,332
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hermann, R. MSFC/Smith, R. E. 42-Astro Engr
MSFC/Devries, L. L.
(62-980 909-55-47) (62-980 908-54-22)

NAS 8-28249 **University of Alabama - Huntsville** **1057**
Scaling characteristics for defining design environment due to transient ground winds & nearfield nonlinear acoustic fields
Period *Obligations*
01/12/72-08/31/73 FY73: TOTAL: \$49,526
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shih, C. C. MSFC/Wilhold, G. A. 46-Mech Engr
MSFC/Reed, T. G.
(62-920 982-52-00) (62-920 976-30-00)

NAS 8-28304 **University of Alabama - Huntsville** **1058**
Skylab experiment on growth of spherical crystals
Period *Obligations*
09/19/72-04/30/74 FY73: \$37,547 TOTAL: \$37,547
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Walter, H. U. MSFC/Adams, W. R. 19-Phys Sci, NEC
MSFC/Bannister, T. C.
(62-960 948-90-95)

NAS 8-28512 **University of Alabama - Huntsville** **1059**
Study of man/system testing program integration
Period *Obligations*
03/20/72-07/31/73 FY73: \$20,000 TOTAL: \$35,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rogers, J. G. MSFC/Walters, H. H. 69-Psych, NEC
MSFC/Strong, J. S.
(62-970 970-63-10)

NAS 8-28545 **University of Alabama - Huntsville** **1060**
Imaging processing techniques and application to the ERTS program
Period *Obligations*
03/22/72-03/21/73 FY73: TOTAL: \$35,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Polge, R. J. MSFC/Hodges, B. 13-Physics
MSFC/Wesson, R. L.
(62-980 908-54-33)

NAS 8-28588 **University of Alabama - Huntsville** **1061**
Investigation of the jet noise prediction theory and application utilizing the PAO formulater
Period *Obligations*
03/17/72-06/30/73 FY73: TOTAL: \$49,946
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Pao, S. P. MSFC/Jones, J. H. 46-Mech Engr
MSFC/Wilhold, G. A.
(62-920 982-52-00) (62-920 976-30-00)

NAS 8-28736 **University of Alabama - Huntsville** **1062**
Experimental investigations of relationships between the pressure drop and pertinent flow system parameters of capillary screen channels
Period *Obligations*
05/17/72-05/16/73 FY73: TOTAL: \$35,194
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shih, C. C. MSFC/Allums, S. L. 46-Mech Engr
MSFC/Hastings, L. J.
(62-910 933-40-00)

NAS 8-28954 **University of Alabama - Huntsville** **1063**
Design, development, & delivery of relativity experiment gyro mount
Period *Obligations*
05/18/72-08/18/72 FY73: TOTAL: \$4,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Eglitis, A. MSFC/Wills, F. D. 13-Physics
(62-850 188-41-54)

NAS 8-29316 **University of Alabama - Huntsville** **1064**
Working model of the London moment readout system
Period *Obligations*
10/06/72-10/01/73 FY73: \$50,241 TOTAL: \$50,241
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Karr, G. R. MSFC/Decher, R. 13-Physics
MSFC/Urban, E.
(62-850 188-41-54) (62-850 188-78-51)

NAS 8-29317 **University of Alabama - Huntsville** **1065**
Study of space vehicle environment criteria
Period *Obligations*
10/11/72-08/01/73 FY73: \$29,984 TOTAL: \$29,984
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rao, G. L. MSFC/Smith, R. E. 49-Engr, NEC
MSFC/West, G. S., Jr.
(62-704 502-21-30)

NAS 8-29501 **University of Alabama - Huntsville** **1066**
Study analysis of experimental concepts relative to plasma physics and environment perturbations laboratory
Period *Obligations*
12/22/72-06/22/73 FY73: \$8,997 TOTAL: \$8,997
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wu, S. T. MSFC/Smith, R. E. 13-Physics
MSFC/Tellies, H. B.
(62-980 975-84-10)

NAS 8-29542 **University of Alabama - Huntsville** **1067**
Electrical characterization of single crystals
Period *Obligations*
01/02/72-11/30/73 FY73: \$83,482 TOTAL: \$83,482
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Castle, J. G. MSFC/Davidson, M. C. 47-Materials Engr
MSFC/Zwiener, J.
(62-960 948-90-95) (62-980 975-90-95)

NAS 8-29543 **University of Alabama - Huntsville** **1068**
Airglow research
Period *Obligations*
02/01/73-02/01/74 FY73: \$29,990 TOTAL: \$29,990
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wu, S. T. MSFC/Smith, R. E. 13-Physics
(62-850 188-36-56)

NASA'S UNIVERSITY PROGRAM
ALABAMA (Continued)

NAS 8-29650 **University of Alabama - Huntsville** **1069**
 Evaluation & comparison of semiconductor specimens by X-ray techniques

Period	Obligations	
03/20/73-01/04/74	FY73: \$16,999	TOTAL: \$16,999
Prin. Invest.	NASA Tech. Officer	CASE Category
Walter, H. U.	MSFC/Davidson, M. C.	13-Physics
	MSFC/Zwiener, Z. M.	

(62-980 975-90-95)

NAS 8-30159 **University of Alabama - Huntsville** **1070**
 Scaling procedures needed to define Saturn ground winds and intense near-field acoustic design

Period	Obligations	
02/07/69-04/01/72	FY73:	TOTAL: \$79,978
Prin. Invest.	NASA Tech. Officer	CASE Category
Shih, C. C.	MSFC/Reed, T. G.	46-Mech Engr
	MSFC/Wilhold, G. A.	

(62-920 982-52-00) (62-920 976-30-00) (62-910 933-50-00)

NAS 8-30216 **University of Alabama - Huntsville** **1071**
 Study of define points of entry for potential contaminants in limestone aquifers

Period	Obligations	
06/22/73-11/22/73	FY73: \$5,408	TOTAL: \$5,408
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/Hamby, H. G.	39-Env Sci, NEC
	MSFC/Bensko, J.	

(62-680 160-75-98)

NAS 8-30244 **University of Alabama - Huntsville** **1072**
 Study of effect of shock wave compaction on A-15 superconductors

Period	Obligations	
06/27/73-03/27/73	FY73: \$23,720	TOTAL: \$23,720
Prin. Invest.	NASA Tech. Officer	CASE Category
Otto, G.	MSFC/Urban, E. W.	13-Physics
	MSFC/Lacy, L. L.	

(62-950 953-37-00)

NGL 01-008-001 **University of Alabama - Huntsville** **1073**
 Research in aerospace physical sciences and engineering

Period	Obligations	
09/17/69-02/28/76	FY73: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rush, J. E.	HQ-PY/Redding, E. R.	99-Multi-Discip
	MSFC/Kent, M. I.	

(10-371 340-00-00) (10-370 183-00-00)

NAS 5-21876 **University of Alabama - Tuscaloosa** **1074**
 ERTS-A data user investigation using data from Alabama

Period	Obligations	
10/06/72-09/01/74	FY73: \$200,000	TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Henry, H. R.	GSFC/Stonesifer, G. R.	32-Geological Sci

(51-680 641-14-04)

NAS 8-1517 **University of Alabama - Tuscaloosa** **1075**
 Method for correlating elevated temperature fatigue data

Period	Obligations	
02/01/66-02/01/77	FY73:	TOTAL: \$9,340
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	42-Astro Engr

(62-742 124-00-00)

NAS 8-2571 **University of Alabama - Tuscaloosa** **1076**
 Physics chemical and thermodynamic considerations on launch vehicle materials

Period	Obligations	
01/01/66-01/01/77	FY73:	TOTAL: \$1,911
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	42-Astro Engr

(62-910 931-31-00)

NAS 8-11249 **University of Alabama - Tuscaloosa** **1077**
 Interaction of slow electrons with light gas atoms

Period	Obligations	
05/01/66-05/01/77	FY73:	TOTAL: \$8,399
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	13-Physics

(62-740 129-00-00)

NAS 8-20172 **University of Alabama - Tuscaloosa** **1078**
 Study and analysis of the FM/FM and SS/FM telemetry systems for the Saturn vehicle

Period	Obligations	
06/10/65-08/31/73	FY73: \$24,921	TOTAL: \$529,545
Prin. Invest.	NASA Tech. Officer	CASE Category
Houts, R. C.	MSFC/Emens, F. H.	45-Elec Engr
	MSFC/Eichelberger, E. P.	

(62-500 150-22-03)

NAS 8-25562 **University of Alabama - Tuscaloosa** **1079**
 Study of the effects of atmospheric turbulence on laser communication system

Period	Obligations	
03/03/70-01/06/73	FY73: \$21,000	TOTAL: \$89,824
Prin. Invest.	NASA Tech. Officer	CASE Category
Webb, W. E.	MSFC/Randall, J. L.	45-Elec Engr
	MSFC/Marrero, P. J.	

(62-704 502-23-16)

NAS 8-28019 **University of Alabama - Tuscaloosa** **1080**
 Active control of primary mirror of an orbiting telescope with thermal excitation

Period	Obligations	
10/18/71-12/31/73	FY73: \$15,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hill, J. L.	MSFC/Clarke, W. D.	49-Engr, NEC
	MSFC/Randall, J. L.	

(62-704 502-23-21)

NAS 8-28098 **University of Alabama - Tuscaloosa** **1081**
 Crystal growth

Period	Obligations	
12/02/71-01/21/74	FY73: \$24,994	TOTAL: \$59,826
Prin. Invest.	NASA Tech. Officer	CASE Category
Miyagawa, I.	MSFC/Bannister, T. C.	13-Physics
	MSFC/Arnett, G. M.	

(62-980 975-90-95)

NASA'S UNIVERSITY PROGRAM **ALABAMA (Continued)**

NAS 8-28180 **University of Alabama - Tuscaloosa** **1082**
Study of fluctuating pressure field associated with plume induced flow separation (PIFS) phenomenon occurring on launch vehicles at high altitude

Period	Obligations	
01/21/72-08/31/73	FY73:	TOTAL: \$33,940
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Doughty, J. O.	MSFC/Guest, S. H.	46-Mech Engr
	MSFC/Jones, J. H.	
(62-920 982-52-00)	(62-920 976-30-00)	

NAS 8-29494 **University of Alabama - Tuscaloosa** **1083**
Study-experiment analysis and ground base test programs for a single crystal growth project

Period	Obligations	
01/29/73-12/31/73	FY73: \$19,497	TOTAL: \$19,497
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
De'Smet, D. J.	MSFC/Schafer, C.	13-Physics
	MSFC/Davidson, M. C.	
(62-960 948-90-95)		

NAS 8-29900 **University of Alabama - Tuscaloosa** **1084**
Analysis of the relativistic orbiting gyroscope experiment

Period	Obligations	
05/31/73-09/30/73	FY73: \$6,931	TOTAL: \$6,931
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coulter, C. A.	MSFC/Eby, P. B.	13-Physics
	MSFC/Hale, D. P.	
(62-850 188-41-54)		

NAS 8-29936 **University of Alabama - Tuscaloosa** **1085**
Assessment of practicality of remote sensing techniques for study of effects of strip mining in Alabama

Period	Obligations	
06/08/73-06/08/74	FY73: \$14,989	TOTAL: \$14,989
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hughes, T. H.	MSFC/Bensko, J., Jr.	32-Geological Sci
	MSFC/Green, W. M.	
(62-680 160-75-10)		

NAS 8-29937 **University of Alabama - Tuscaloosa** **1086**
Use of remote sensing techniques for geological hazard surveys in vegetated urban regions

Period	Obligations	
06/08/73-06/08/74	FY73: \$14,996	TOTAL: \$14,996
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stow, S. H.	MSFC/Bensko, J., Jr.	32-Geological Sci
	MSFC/Green, W. M.	
(62-680 160-75-10)		

NAS 8-29953 **University of Alabama - Tuscaloosa** **1087**
Radar propagation beyond the horizon

Period	Obligations	
06/08/73-09/30/73	FY73: \$5,852	TOTAL: \$5,852
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dudgeon, J. E.	MSFC/Durrett, R. H.	45-Elec Engr
	MSFC/Stone, D.	
(62-920 976-30-00)		

NGL 01-002-064 **University of Alabama - Tuscaloosa** **1088**
Research in the aerospace physical sciences and engineering

Period	Obligations	
03/01/69-08/01/73	FY73:	TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Whitehurst, R.	HQ-PY/Redding, E. R.	99-Multi-Discip
	MSFC/Kent, M.	
(10-370 183-00-00)		

NGT 01-002-002 **University of Alabama - Tuscaloosa** **1089**
Training of graduate students in space-related science and technology

Period	Obligations	
03/20/63-08/01/72	FY73:	TOTAL: \$883,812
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rodgers, E.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGT 01-002-080 **University of Alabama - Tuscaloosa** **1090**
Summer faculty fellowship program

Period	Obligations	
01/14/71-12/31/74	FY73: \$104,542	TOTAL: \$211,885
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Raney, D. C.	HQ-PY/Carter, C. H.	49-Engr, NEC
(10-371 340-00-00)	(62-960 972-50-00)	

NAS 8-27301 **University of Montevallo** **1091**
Mathematical analysis of imaging characteristics of an ATM-X-ray telescope

Period	Obligations	
05/07/71-08/15/73	FY73: \$2,016	TOTAL: \$16,736
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Foreman, J. W., Jr.	MSFC/Hoover, R. B.	11-Astronomy
	MSFC/Randall, J. L.	
(62-850 188-48-51)	(62-850 188-00-00)	

NAS 8-28722 **University of South Alabama** **1092**
Studies of atmospheric effects on remote sensing of non linear temperature sources

Period	Obligations	
04/13/72-10/13/73	FY73:	TOTAL: \$20,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Elliott, J. M.	MSFC/Larson, P. A.	46-Mech Engr
McNeill, W. A.	MSFC/Brown, S. C.	
(62-680 160-44-58)		

ALASKA

NAS 5-21833 **University of Alaska - Fairbanks** **1093**
Twelve ERTS data user investigations

Period	Obligations	
09/13/72-01/01/74	FY73: \$450,000	TOTAL: \$450,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Belon, A. E.	GSFC/Crump, E. W.	32-Geological Sci
Branton, C. I.	GSFC/Ragland, T. M.	
Anderson, J. H.		
(51-680 641-14-01)	(51-680 641-14-02)	(51-680 641-14-03)

NASA'S UNIVERSITY PROGRAM
ALASKA (Continued)

NAS 5-22167 University of Alaska - Fairbanks 1094
 Communications support for US/USSR Bering Sea experiment
Period *Obligations*
 02/01/73-03/31/73 FY73: \$2,897 TOTAL: \$2,897
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Staley, G. GSFC/Smith, W. S. 33-Oceanography
 Merritt, R.
 (51-680 160-44-53)

NAS 5-23085 University of Alaska - Fairbanks 1095
 Camera and communication coverage of rocket launches
Period *Obligations*
 02/14/72-12/14/72 FY73: TOTAL: \$17,857
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Wescott, E. M. GSFC/Stolarik, J. D. 31-Atmos Sci
 GSFC/Heppner, J. P.
 (51-850 879-11-00)

NAS 6-1932 University of Alaska - Fairbanks 1096
 Support services and site use of the Geophysical Institute facilities to launch rockets for auroral studies
Period *Obligations*
 02/11/71-04/30/73 FY73: \$456,152 TOTAL: \$853,402
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Davis, T. N. WS/Gray, J. W. 31-Atmos Sci
 Brown, N. B.
 (53-500 311-04-03) (53-850 874-22-00) (53-850 879-24-00)

NAS 9-11329 University of Alaska - Fairbanks 1097
 Electron backscatter observation
Period *Obligations*
 10/28/70-06/30/72 FY73: TOTAL: \$24,988
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Davis, T. N. JSC/Trichel, M. C. 45-Elec Engr
 (72-850 879-00-00)

NAS 9-11815 University of Alaska - Fairbanks 1098
 Television observations of artificial auroras
Period *Obligations*
 06/29/71-12/31/72 FY73: \$45,129 TOTAL: \$160,129
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Davis, T. N. JSC/Trichel, M. C. 39-Env Sci, NEC
 (72-850 879-11-00)

NAS 9-12649 University of Alaska - Fairbanks 1099
 Definition of scientific objectives for design of an auroral observatory
Period *Obligations*
 06/09/72-01/08/73 FY73: TOTAL: \$70,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 JSC/Konradi, A. 11-Astronomy
 (72-980 975-84-45) (72-980 975-84-10)

NGL 02-001-063 University of Alaska - Fairbanks 1100
 Geophysical and geochemical investigations of volcanic phenomena in the Katmai National Monument and contiguous areas of Alaska
Period *Obligations*
 04/25/69-03/01/73 FY73: TOTAL: \$309,200
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Forbes, R. B. JSC/Laidley, R. 32-Geological Sci
 JSC/Morrison, D.
 (72-910 914-50-00)

NGL 02-001-092 University of Alaska - Fairbanks 1101
 Application of remote sensing data to surveys of the Alaskan environment
Period *Obligations*
 07/26/72-06/01/75 FY73: \$150,000 TOTAL: \$150,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Belan, A. C. HQ-PY/Vitale, J. A. 39-Env Sci, NEC
 Miller, J. M.
 (10-371 340-00-00)

NGR 02-001-001 University of Alaska - Fairbanks 1102
 Theoretical study of the ring current and geomagnetic field phenomena
Period *Obligations*
 10/15/61-12/31/73 FY73: \$25,000 TOTAL: \$518,516
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Akasofu, S. I. HQ-SG/Kavanagh, L. D. 13-Physics
 HQ-SG/Hallenbeck, D. R.
 (10-850 385-36-00) (10-850 188-36-55) (10-850 188-00-00)

NGR 02-001-087 University of Alaska - Fairbanks 1103
 Measurement of electric fields in a rayed auroral arc
Period *Obligations*
 03/02/72-01/31/73 FY73: TOTAL: \$73,638
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Davis, T. N. HQ-SG/Kavanagh, L. D. 13-Physics
 (10-850 879-11-00)

NGR 02-001-088 University of Alaska - Fairbanks 1104
 Field line tracing by shaped charge injection of barium plasma
Period *Obligations*
 05/04/72-01/31/74 FY73: \$80,774 TOTAL: \$160,774
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Wescott, E. M. HQ-SG/Dubin, M. 31-Atmos Sci
 HQ-SG/Kavanagh, L. D., Jr.
 (10-850 879-11-00)

NGR 02-001-093 University of Alaska - Fairbanks 1105
 Study aurora oval
Period *Obligations*
 09/01/72-06/30/73 FY73: \$10,331 TOTAL: \$10,331
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Akasofu, S. I. ARC/Haughney, L. C. 31-Atmos Sci
 (21-850 352-02-02)

NGR 02-001-094 University of Alaska - Fairbanks 1106
 Coordinated observations of chemical release from ground and from aircraft at high altitude
Period *Obligations*
 03/07/73-03/31/73 FY73: \$6,000 TOTAL: \$6,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Romick, G. J. HQ-SG/Dubin, M. 31-Atmos Sci
 (10-850 879-11-00)

NGR 02-001-099 University of Alaska - Fairbanks 1107
 Research effort by airborne sciences
Period *Obligations*
 11/28/72-12/31/73 FY73: \$32,249 TOTAL: \$32,249
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Sivjee, G. G. ARC/Haughney, L. C. 31-Atmos Sci
 (21-850 352-02-01) (21-850 352-02-02)

NASA'S UNIVERSITY PROGRAM
ALASKA (Continued)

NGT 02-001-007 **University of Alaska - Fairbanks** **1108**
Training of predoctoral graduate students in space related sciences & technology
Period *Obligations*
03/20/64-08/01/72 **FY73:** **TOTAL: \$186,110**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rae, K. M. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

ARIZONA

NAS 2-2640 **Arizona State University** **1109**
Investigation of heat transfer characteristics
Period *Obligations*
01/01/66-07/01/76 **FY73:** **TOTAL: \$2,622**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
ARC/ 13-Physics
(21-740 129-00-00)

NGL 03-001-001 **Arizona State University** **1110**
Development of improved procedures for sampling, characterizing & classifying meteorite specimens
Period *Obligations*
04/16/63-02/29/76 **FY73: \$24,872** **TOTAL: \$230,412**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Moore, C. B. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Pomeroy, J. H. (10-840 185-00-00) (10-810 195-00-00)
(10-810 195-42-67)

NGR 03-001-057 **Arizona State University** **1111**
Lunar sample analysis
Period *Obligations*
01/12/71-01/31/74 **FY73: \$14,000** **TOTAL: \$42,700**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Moore, C. B. JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)

NGT 03-001-002 **Arizona State University** **1112**
Training of graduate students in space-related science and technology
Period *Obligations*
03/30/63-08/01/72 **FY73:** **TOTAL: \$517,134**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Burke, W. J. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 2-5604 **University of Arizona** **1113**
Support for imaging photopolarimeter
Period *Obligations*
07/01/69-04/30/73 **FY73: \$60,164** **TOTAL: \$242,764**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gehrels, T. ARC/Hall, C. F. 13-Physics
(21-840 811-22-00)

NAS 2-6265 **University of Arizona** **1114**
IPP software & display system
Period *Obligations*
11/01/70-01/31/74 **FY73: \$198,000** **TOTAL: \$433,800**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gehrels, T. ARC/Hall, C. F. 11-Astronomy
(21-840 811-22-00)

NAS 2-6447 **University of Arizona** **1115**
Disassembly, packing, shipping & set-up of a polariscope system
Period *Obligations*
05/11/71-11/01/71 **FY73:** **TOTAL: \$10,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
ARC/ 49-Engr, NEC
(21-850 188-41-55)

NAS 2-7476 **University of Arizona** **1116**
Real time image display system
Period *Obligations*
03/01/73-01/31/74 **FY73: \$64,328** **TOTAL: \$64,328**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Baker, L. R. ARC/Hall, C. F. 11-Astronomy
(21-840 811-22-00)

NAS 5-11425 **University of Arizona** **1117**
Charge identification module for phase B definition study of HEAO-A spacecraft
Period *Obligations*
04/27/71-10/01/72 **FY73:** **TOTAL: \$107,060**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bowen, T. GSFC/Browning, R. K. 11-Astronomy
GSFC/Janniche, P. A. (51-850 188-78-53) (51-850 188-46-52)
(51-850 832-12-00)

NAS 5-11444 **University of Arizona** **1118**
Analysis and evaluation of scientific results from the E-09 & OGO-5 experiment
Period *Obligations*
06/02/71-06/30/73 **FY73:** **TOTAL: \$20,036**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
L'Heureux, J. J. GSFC/Mecse, K. J. 13-Physics
(51-850 841-12-00) (51-850 385-50-00)

NAS 5-11456 **University of Arizona** **1119**
Funding action
Period *Obligations*
06/16/71-06/16/73 **FY73: \$29,995** **TOTAL: \$59,845**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Marathy, A. S. GSFC/Chin, E. S. 11-Astronomy
(51-850 188-41-51)

NAS 5-21484 **University of Arizona** **1120**
Maintenance & operation of a 60 inch telescope
Period *Obligations*
10/28/71-10/01/72 **FY73: \$28,578** **TOTAL: \$52,578**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kuiper, G. P. GSFC/Boggess, N. W. 11-Astronomy
Lee, T. GSFC/Hamilton, T. (51-910 933-50-00)

NAS 5-21661 **University of Arizona** **1121**
Infrared polarimeter prototype
Period *Obligations*
09/10/71-09/10/72 **FY73:** **TOTAL: \$31,584**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Coffeen, D. L. GSFC/Hovis, W. A. 31-Atmos Sci
(51-680 160-44-53)

NASA'S UNIVERSITY PROGRAM **ARIZONA (Continued)**

<p>NAS 5-21777 University of Arizona 1122 Marine environment study of the north gulf of California</p> <p><i>Period</i> <i>Obligations</i> 06/21/72-07/31/73 FY73: \$90,421 TOTAL: \$96,421</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Hendrickson, J. R. GSFC/Stonesifer, G. R. 33-Oceanography</p> <p>(51-680 641-14-05) (51-680 641-14-00)</p>	<p>NAS 5-23176 University of Arizona 1128 Phase c/d for HECRE-HEAO-A</p> <p><i>Period</i> <i>Obligations</i> 12/01/72-07/01/76 FY73: \$30,000 TOTAL: \$30,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Bowen, T. GSFC/Browning, R. K. 11-Astronomy</p> <p>Delise, D. A. (51-850 832-12-00)</p>
<p>NAS 5-21812 University of Arizona 1123 Study to explore the use of orbital remote sensing</p> <p><i>Period</i> <i>Obligations</i> 08/17/72-08/01/74 FY73: \$27,488 TOTAL: \$27,488</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> McGinnies, W. G. GSFC/Stonesifer, G. R. 59-Life Sci, NEC</p> <p>Haase, E. F. (51-680 641-14-07)</p>	<p>NAS 8-21572 University of Arizona 1129 Access to and use of Catalina Mountain Observatory</p> <p><i>Period</i> <i>Obligations</i> 04/17/69-06/30/73 FY73: TOTAL: \$3,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Simmons, M. J. MSFC/Atkins, H. L. 11-Astronomy</p> <p>(62-850 188-00-00)</p>
<p>NAS 5-21819 University of Arizona 1124 ERTS-A data user investigation to determine desert plant species by spectral signatures</p> <p><i>Period</i> <i>Obligations</i> 10/04/72-12/01/73 FY73: \$14,156 TOTAL: \$14,156</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Lowe, C. H. GSFC/Stonesifer, G. R. 59-Life Sci, NEC</p> <p>Lepley, L. K. (51-680 641-14-07)</p> <p>Van Trice, B. J.</p>	<p>NAS 8-27804 University of Arizona 1130 Stray light supression study</p> <p><i>Period</i> <i>Obligations</i> 11/20/71-11/29/73 FY73: TOTAL: \$159,950</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Tifft, W. G. MSFC/Griner, D. B. 13-Physics</p> <p>(62-980 975-84-20) MSFC/Zurasky, J. L. (62-980 975-84-78)</p>
<p>NAS 5-21820 University of Arizona 1125 Investigation of use of earth resources technological satellite</p> <p><i>Period</i> <i>Obligations</i> 08/17/72-08/01/74 FY73: \$20,000 TOTAL: \$20,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Smith, E. L., Jr. GSFC/Stonesifer, G. R. 39-Env Sci, NEC</p> <p>Fish, E. B. (51-680 641-14-01)</p>	<p>NAS 8-27863 University of Arizona 1131 Study on an instrument for sensing errors in a telescope's wavefront</p> <p><i>Period</i> <i>Obligations</i> 01/21/72-04/23/73 FY73: TOTAL: \$72,845</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Shack, R. V. MSFC/Wyman, C. L. 13-Physics</p> <p>(62-980 975-84-78) MSFC/Jones, C. O.</p>
<p>NAS 5-21849 University of Arizona 1126 Evaluation of ERTS-A and EREP image sensor spatial resolution in photographic form</p> <p><i>Period</i> <i>Obligations</i> 09/18/72-03/01/74 FY73: \$55,000 TOTAL: \$55,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Slater, P. N. GSFC/Stonesifer, G. R. 99-Multi-Discip</p> <p>Baker, L. R. (51-680 641-14-09)</p> <p>Schoengerdt, R. A.</p>	<p>NAS 8-28661 University of Arizona 1132 Measurement of dimensional stability</p> <p><i>Period</i> <i>Obligations</i> 06/06/72-06/05/73 FY73: \$17,012 TOTAL: \$41,573</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Jacobs, S. F. MSFC/Kurtz, R. L. 13-Physics</p> <p>(62-850 188-78-57) MSFC/Williams, J. R.</p>
<p>NAS 5-22121 University of Arizona 1127 Maintenance & operation of a 60 inch telescope</p> <p><i>Period</i> <i>Obligations</i> 10/01/72-09/01/73 FY73: \$50,396 TOTAL: \$50,396</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Kuiper, G. P. GSFC/Steher, T. P. 11-Astronomy</p> <p>(51-910 933-50-00) (51-950 951-16-00)</p>	<p>NAS 9-11884 University of Arizona 1134 Investigation of high-energy cosmic ray detectors</p> <p><i>Period</i> <i>Obligations</i> 06/22/71-06/30/73 FY73: TOTAL: \$27,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Kridler, E. P. JSC/Craddock, W. 13-Physics</p> <p>(72-910 914-50-00)</p>

NAS 9-12613	University of Arizona	1135
Field support of lunar infrared observation		
<i>Period</i>	<i>Obligations</i>	
03/14/72-12/01/72	FY73:	TOTAL: \$14,878
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kuiper, G. P.	JSC/Mendell, W. W.	42-Astro Engr
(72-910 914-50-00)		

NASR 138	University of Arizona	1136
Development and testing of basic photopolarimeter instrument package at the working breadboard model stage adaptable to future missions		
<i>Period</i>	<i>Obligations</i>	
01/03/63-10/01/74	FY73:	TOTAL: \$296,897
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gehrels, A. M.	HQ-SL/Brunk, W. E.	31-Atmos Sci
(10-840 185-00-00)		

NASW 2283	University of Arizona	1137
Optical studies on large space telescope		
<i>Period</i>	<i>Obligations</i>	
08/16/71-08/01/73	FY73:	TOTAL: \$57,050
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meinel, A. B.	HQ-SG/Aucremanne, M. J.	42-Astro Engr
	HQ-SG/Chase, R. H.	
(10-850 188-78-57)		

NGL 03-002-002	University of Arizona	1138
Planetary, spectroscopic, selenodetic & physical studies of lunar surface		
<i>Period</i>	<i>Obligations</i>	
08/12/61-05/31/76	FY73: \$108,608 TOTAL: \$2,419,460	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kuiper, G. P.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-41-80)	(10-840 185-00-00)	

NGL 03-002-006	University of Arizona	1139
Application of modern automatic control theory to nuclear rocket dynamics & control		
<i>Period</i>	<i>Obligations</i>	
06/28/63-06/01/74	FY73: \$45,081	TOTAL: \$424,518
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schultz, D. G.	HQ-NS/Schwenk, F. C.	45-Elec Engr
	HQ-NS/Hintze, A. S.	
(10-704 503-04-01)	(45-720 112-00-00)	

NGL 03-002-017	University of Arizona	1140
Operation of MV van de Graaff accelerator for basic experiments in atomic optical spectroscopy		
<i>Period</i>	<i>Obligations</i>	
05/21/64-10/01/74	FY73: \$50,000	TOTAL: \$910,061
<i>Prtn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bickel, W.	HQ-SG/Roman, N. G.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-41-51)	(10-850 188-00-00)	

NGL 03-002-019	University of Arizona	1141
High resolution electron microscopic techniques to study biological material		
<i>Period</i>	<i>Obligations</i>	
06/07/63-08/01/74	FY73: \$30,000	TOTAL: \$351,055
<i>Prtn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoenig, S. A.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-80)		

NGL 03-002-081	University of Arizona	1142
Photometry and polarimetry of minor planets		
<i>Period</i>	<i>Obligations</i>	
03/14/66-03/31/76	FY73: \$39,959	TOTAL: \$289,272
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gehrels, A. M.	HQ-SG/Dubin, M.	11-Astronomy
	HQ-SL/Brunk, W. E.	
(10-850 188-45-51)	(10-850 188-00-00)	

NGL 03-002-122	University of Arizona	1143
Astrometric and astrophysical investigation of comets, minor planets, and satellites		
<i>Period</i>	<i>Obligations</i>	
02/22/67-04/01/75	FY73: \$15,590	TOTAL: \$188,015
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roemer, E.	HQ-SL/Brunk, W. E.	11-Astronomy
(10-840 196-41-80)	(10-840 185-00-00)	

NGL 03-002-191		University of Arizona		1144	
Lunar surface and planetology					
Period		Obligations			
05/16/69-05/31/76		FY73: \$44,148		TOTAL: \$389,455	
Prin. Invest.		NASA Tech. Officer		CASE Category	
Kuiper, G. P.		HQ-SM/Bryson, R. P.		32-Geological Sci	
		HQ-SM/Allenby, R. J.			
(10-810 383-09-50)		(10-810 195-00-00)		(10-810 383-00-00)	

NGL 03-002-313	University of Arizona	1145
Remote sensing applications for state & local government		
<i>Period</i>	<i>Obligations</i>	
03/07/72-02/28/76	FY73: \$100,000	TOTAL: \$200,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Johnson, J. D.	HQ-PY/Vitale, J. A.	39-Env Sci, NEC
Fostier, K. E.		
(10-371 340-00-00)		

NGR 03-002-071	University of Arizona	1146
Cosmic ray investigations of elementary particle phenomena at very high energies		
<i>Period</i>	<i>Obligations</i>	
01/12/66-01/31/74	FY73: \$100,000	TOTAL: \$895,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowen, T.	HQ-SG/Opp, A. G.	11-Astronomy
	HQ-SG/Kavanagh, L. D.	
(10-850 188-46-52)	(10-850 188-00-00)	

NGR 03-002-107	University of Arizona	1147
Basic research in astrophysics and space science		
<i>Period</i>	<i>Obligations</i>	
09/01/67-08/31/73	FY73: \$54,811	TOTAL: \$308,063
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fan, C. Y.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 188-36-55)		

NASA'S UNIVERSITY PROGRAM
ARIZONA (Continued)

NGR 03-002-153		University of Arizona		1148
Feasibility and preliminary design definition for a lunar surface optical environment and experimental package				
<i>Period</i>		<i>Obligations</i>		
06/20/68-06/01/72	FY73:	TOTAL: \$90,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Tiftt, W. G.	HQ-SM/Bryson, R. B.	11-Astronomy		
	HQ-SM/Allenby, R. J.			
(10-980 945-43-00)	(10-910 914-41-00)			

NGR 03-002-155		University of Arizona		1149
Optimization of solutions of the equation of radiative transfer for atmospheric processes including emission, absorption, polarization, and multiple mie scattering				
<i>Period</i>		<i>Obligations</i>		
04/08/68-08/31/73	FY73: \$32,000	TOTAL: \$222,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Herman, B. M.	GSFC/Curran, R. J.	31-Atmos Sci		
(51-680 160-44-54)				

NGR 03-002-171		University of Arizona		1150
Analysis of carbonaceous meteorites				
<i>Period</i>		<i>Obligations</i>		
10/26/68-09/30/73	FY73: \$50,000	TOTAL: \$292,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Nagy, B.	HQ-SL/Young, R. S.	32-Geological Sci		
Urey, H. C.				
(10-840 192-55-62)				

NGR 03-002-180		University of Arizona		1151
Multicolor photoelectric photometry and interferometric /Fourier transform/ infrared spectroscopy				
<i>Period</i>		<i>Obligations</i>		
02/17/69-07/31/73	FY73:	TOTAL: \$62,751		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Lee, T. A.	GSFC/Hoffman, W. F.	11-Astronomy		
	GSFC/Stothers, R.			
(51-850 405-02-02)	(51-850 188-00-00)			

NGR 03-002-184		University of Arizona		1152
Multi-color basic photometry for stars brighter than 5.0 magnitude				
<i>Period</i>		<i>Obligations</i>		
03/06/69-09/01/71	FY73:	TOTAL: \$57,842		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Johnston, H. L.	GSFC/Draper, L. T.	11-Astronomy		
	GSFC/Abercrombie, R.			
(51-750 125-00-00)				

NGR 03-002-193		University of Arizona		1153
OAO-A2 Wisconsin observation experiment				
<i>Period</i>		<i>Obligations</i>		
04/24/69-06/30/72	FY73:	TOTAL: \$11,872		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Gehrels, A. M.	HQ-SG/Ashworth, C. D.	11-Astronomy		
	HQ-SG/Roman, N. G.			
(10-850 831-12-00)	(10-850 831-00-00)			

NGR 03-002-213		University of Arizona		1154
Flow visualization studies of the fluidistics in a nozzle with large blowing rates				
<i>Period</i>		<i>Obligations</i>		
02/05/70-09/30/73	FY73: \$29,992	TOTAL: \$129,992		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Perkins, H. C.	LERC/Kascak, A. F.	49-Engr, NEC		
Kinney, R. B.				
(22-704 503-04-01)	(22-720 122-00-00)			

NGR 03-002-219		University of Arizona		1155
Photopolarimetry of Mercury, Mars, and satellites				
<i>Period</i>		<i>Obligations</i>		
02/13/70-10/31/73	FY73: \$34,968	TOTAL: \$139,388		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Gehrels, A. M.	HQ-SL/Brunk, W. E.	11-Astronomy		
	HQ-SL/Fellows, R. F.			
(10-840 196-41-80)	(10-840 196-00-00)			

NGR 03-002-236		University of Arizona		1156
Program to determine ultimate optical images that can be produced by aluminum mirror photometric telescopes				
<i>Period</i>		<i>Obligations</i>		
06/29/70-12/01/71	FY73:	TOTAL: \$12,400		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Johnson, H. L.	HQ-SL/Brunk, W. E.	11-Astronomy		
	HQ-SL/Fellows, R. F.			
(10-840 196-00-00)	(10-840 196-41-81)			

NGR 03-002-237		University of Arizona		1157
Lunar sample analysis				
<i>Period</i>		<i>Obligations</i>		
02/04/71-01/31/74	FY73: \$51,000	TOTAL: \$173,400		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Nagy, B.	JSC/Harris, J. W.	12-Chemistry		
(72-910 914-40-00)				

NGR 03-002-258		University of Arizona		1158
Infrared spectroscopy of sun, planets & stars				
<i>Period</i>		<i>Obligations</i>		
02/18/72-02/14/73	FY73:	TOTAL: \$15,007		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Kuiper, G. P.	ARC/Cameron, R. M.	11-Astronomy		
	HQ-SG/Boggess, N. W.			
(21-850 352-02-01)				

NGR 03-002-269		University of Arizona		1159
Operation of a 30 cm flying infrared telescope				
<i>Period</i>		<i>Obligations</i>		
05/04/71-05/31/74	FY73: \$41,626	TOTAL: \$161,526		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Low, F. J.	HQ-SG/Roman, N. G.	11-Astronomy		
	HQ-SG/Boggess, N. W.			
(10-850 188-41-55)	(10-840 196-41-86)			

NGR 03-002-270		University of Arizona		1160
Infrared site testing on Mt Lemmon and Catalina Observatory				
<i>Period</i>		<i>Obligations</i>		
05/04/71-03/31/72	FY73:	TOTAL: \$21,418		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Kuiper, G. P.	HQ-SL/Brunk, W. E.	11-Astronomy		
	HQ-SL/Fellows, R. F.			
(10-840 196-41-80)				

NASA'S UNIVERSITY PROGRAM **ARIZONA (Continued)**

NGR 03-002-274 **University of Arizona** **1161**
Survey of infrared sky noise and precipitable water at the
Observatorio de San Pedro Martin, Baja, California

Period	FY73:	Obligations
05/04/71-07/31/72		TOTAL: \$17,775
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, H. L.	HQ-SL/Brunk, W. E.	11-Astronomy

(10-840 196-41-80)

NGR 03-002-275 **University of Arizona** **1162**
Definition phase of the Grand Tour missions photo-polarimetry
investigations for outer planet missions

Period	FY73:	Obligations
04/06/71-06/01/72		TOTAL: \$56,448
Prin. Invest.	NASA Tech. Officer	CASE Category
Gehrels, A. M.	HQ-SL/Mitz, M. A.	11-Astronomy
	HQ-SL/Keller, J. W.	

(10-840 186-68-68) (10-840 186-68-52)

NGR 03-002-277 **University of Arizona** **1163**
Augmentation of a 30 cm flying infrared telescope

Period	FY73:	Obligations
05/24/71-08/31/72		TOTAL: \$39,249
Prin. Invest.	NASA Tech. Officer	CASE Category
Low, F. J.	HQ-SG/Bogges, N. W.	11-Astronomy
	ARC/Cameron, R. M.	

(10-850 352-02-01)

NGR 03-002-309 **University of Arizona** **1164**
Development of a photon-counting silicon intensifier target
device

Period	FY73:	Obligations
04/14/72-06/30/73		TOTAL: \$74,884
Prin. Invest.	NASA Tech. Officer	CASE Category
Weymann, R. J.	HQ-SG/Sobieski, S.	11-Astronomy
	HQ-SG/Aucremanne, M. J.	

(10-850 188-78-57)

NGR 03-002-331 **University of Arizona** **1165**
Infrared stellar spectroscopy from the NASA 36 inch telescope
onboard the C-141 aircraft

Period	FY73:	Obligations
03/05/73-02/28/74	\$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, H. L.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M., Jr.	

(21-850 352-02-03)

NGR 03-002-332 **University of Arizona** **1166**
Infrared spectroscopy of the planets from 1-5.6 micron with the
medium-resolution LPL Fourier interferometer

Period	FY73:	Obligations
03/05/73-02/28/74	\$25,000	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Larson, H. P.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M., Jr.	

(21-850 352-02-03)

NGR 03-002-333 **University of Arizona** **1167**
Design, construction & installation of an infrared Fourier-
transform spectrometer for spectroscopic observations of stars,
planets, satellites and other infrared emitting devices

Period	FY73:	Obligations
03/05/73-02/28/74	\$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, H. L.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M., Jr.	

(21-850 352-02-03)

NGR 03-002-334 **University of Arizona** **1168**
Development of a high resolution infrared Fourier spectrometer
for planets and stars using the NASA 91.5 cm airborne tele-
scope

Period	FY73:	Obligations
03/05/73-02/28/74	\$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Larson, H. P.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M., Jr.	

(21-850 352-02-03)

NGR 03-002-354 **University of Arizona** **1169**
Oscillating secondary lightweight mirror design study

Period	FY73:	Obligations
01/09/73-06/30/73	\$1,850	TOTAL: \$1,850
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, H. L.	ARC/Cameron, R. M.	11-Astronomy

(21-850 352-03-00)

NGR 03-002-356 **University of Arizona** **1170**
Infrared observations of the planets

Period	FY73:	Obligations
03/09/73-02/28/74	\$19,000	TOTAL: \$19,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Low, F. J.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	

(10-840 196-41-80)

NGT 03-002-008 **University of Arizona** **1171**
Training of graduate students in space-related science and
technology

Period	FY73:	Obligations
03/29/63-08/01/72		TOTAL: \$865,144
Prin. Invest.	NASA Tech. Officer	CASE Category
Rhodes, H. D.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

ARKANSAS

NAS 9-9433 **Harding College** **1172**
An evaluation of the exergenie exerciser and the Collins pedal
mode ergometer for developing physical fitness

Period	FY73:	Obligations
04/25/69-08/31/73	\$44,927	TOTAL: \$204,170
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/Olree, H. D.	52-Clinical Med

(72-970 970-51-14)

NASA'S UNIVERSITY PROGRAM ARKANSAS (Continued)

NGL 04-001-007 University of Arkansas - Fayetteville 1173
Application of lasers to instrumentation & measurement techniques

Period	Obligations	
06/15/70-10/31/74	FY73: \$11,150	TOTAL: \$310,192
Prin. Invest.	NASA Tech. Officer	CASE Category
Testerman, M. K.	ARC/Ragent, B.	19-Phys Sci, NEC
(21-704 502-37-01)	(10-750 125-00-00)	

NGR 04-001-039 University of Arkansas - Fayetteville 1174
To further basic research in chronobiology by providing support to the 11th international meeting of the Society for Study of Biological Rhythms

Period	Obligations	
09/10/71-06/01/73	FY73:	TOTAL: \$4,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Pauly, J. E.	HQ-MM/	51-Biology
(10-970 970-14-01)		

NAS 9-13196 University of Arkansas - Monticello 1175
Geologic structure of shallow maria - data analysis AA

Period	Obligations	
11/10/72-07/01/75	FY73: \$35,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Delton, R. A.	JSC/Hardee, N.	13-Physics
(72-910 914-49-00)		

CALIFORNIA

NAS 1-9703 California Institute of Technology 1176
Participation in seismology planning for the Viking 1975 missions

Period	Obligations	
04/08/70-03/31/77	FY73: \$108,500	TOTAL: \$335,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, D. L.	LARC/Soffen, G. A.	32-Geological Sci
(23-840 815-20-00)	(23-840 815-00-00)	

NAS 1-12311 California Institute of Technology 1177
Participation in science planning for Viking 1975 mission in the area of biology

Period	Obligations	
07/02/73-03/31/77	FY73: \$34,000	TOTAL: \$34,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	LARC/	39-Env Sci, NEC
(23-840 815-20-00)		

NAS 2-5606 California Institute of Technology 1178
Support of IR instrument

Period	Obligations	
08/15/69-04/30/73	FY73:	TOTAL: \$17,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Munch, G.	ARC/Hall, C. F.	13-Physics
(21-840 811-22-00)	(21-840 811-00-00)	

NAS 2-6556 California Institute of Technology 1179
Pioneer F/G data analysis

Period	Obligations	
09/17/71-06/30/73	FY73: \$20,000	TOTAL: \$27,326
Prin. Invest.	NASA Tech. Officer	CASE Category
Munch, G.	ARC/Hall, C. F.	13-Physics
	ARC/Spahr, J. R.	
(21-840 811-22-00)		

NAS 2-6740 California Institute of Technology 1180
Definition study of ion electron optics - outer planets Grand Tours plasma experiment

Period	Obligations	
01/06/72-05/01/72	FY73:	TOTAL: \$15,306
Prin. Invest.	NASA Tech. Officer	CASE Category
Intriligator, D. S.	ARC/Wolfe, J. H.	19-Phys Sci, NEC
Davis, L., Jr.	ARC/Mihalov, J. D.	
(21-840 186-68-68)		

NAS 5-9312 California Institute of Technology 1181
Cosmic ray experiment for the orbiting geophysical observatories program, OGO-F mission

Period	Obligations	
04/08/66-12/31/72	FY73:	TOTAL: \$820,792
Prin. Invest.	NASA Tech. Officer	CASE Category
Stone, E. C.	GSFC/Meese, K. J.	13-Physics
(51-850 841-00-00)	(51-850 841-12-00)	(51-850 385-50-00)

NAS 5-11066 California Institute of Technology 1182
IMF-H&J electron isotope spectrometer experiment

Period	Obligations	
01/12/68-09/30/75	FY73: \$124,000	TOTAL: \$1,243,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Stone, D. C.	GSFC/Davis, M. A.	13-Physics
(51-850 861-42-00)		

NAS 8-26844 California Institute of Technology 1183
Heat definition study experiment

Period	Obligations	
02/01/71-05/30/72	FY73:	TOTAL: \$248,882
Prin. Invest.	NASA Tech. Officer	CASE Category
Stone, E. C.	MSFC/Dabbs, J. R.	11-Astronomy
	MSFC/Jones, J. B.	
(62-850 832-12-00)	(62-850 188-78-53)	(62-830 180-17-50)

NAS 8-27403 California Institute of Technology 1184
HEAO-MISSION B experiment feasibility study & diffuse X-ray measurement

Period	Obligations	
06/29/71-04/30/73	FY73: \$203,000	TOTAL: \$257,045
Prin. Invest.	NASA Tech. Officer	CASE Category
Garmire, G. P.	MSFC/Talley, D.	11-Astronomy
	MSFC/Jones, J. B.	
(62-850 832-12-00)		

NAS 8-27978 California Institute of Technology 1185
Design, development & operation of the ACR-7 heavy nuclei experiment under the HEAO program

Period	Obligations	
06/23/72-01/31/78	FY73: \$64,000	TOTAL: \$108,560
Prin. Invest.	NASA Tech. Officer	CASE Category
Stone, E. C.	MSFC/Krome, H. O.	11-Astronomy
	MSFC/Cochran, J.	
(62-850 832-12-00)		

**NASA'S UNIVERSITY PROGRAM
CALIFORNIA (Continued)**

NAS 8-28028 California Institute of Technology **1186**
Development of instrumentation for observation of solar octine regions

Period	Obligations	
01/21/72-05/20/74	FY73: \$10,000	TOTAL: \$205,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Zirin, H.	MSFC/Reichman, E. J.	11-Astronomy
	MSFC/Schwindt, P. J.	

(62-980 975-84-78)

NAS 8-28046 California Institute of Technology **1187**
Dynamics of unsteady cavitating cascades

Period	Obligations	
11/16/71-01/15/73	FY73:	TOTAL: \$24,588
Prin. Invest.	NASA Tech. Officer	CASE Category
Acosta, A. J.	MSFC/Gross, L. A.	46-Mech Engr
	MSFC/Strong, J. A.	

(62-710 113-31-12)

NAS 8-28573 California Institute of Technology **1188**
Large area focusing X-ray collector

Period	Obligations	
03/23/72-04/01/72	FY73: \$575	TOTAL: \$14,970
Prin. Invest.	NASA Tech. Officer	CASE Category
Garmire, G.	MSFC/Potter, R. A.	11-Astronomy
	MSFC/Jones, J. B.	

(62-850 832-12-00)

NAS 8-29313 California Institute of Technology **1189**
Dynamics of unsteady cavitating cascades

Period	Obligations	
09/28/72-10/01/73	FY73: \$108,199	TOTAL: \$108,199
Prin. Invest.	NASA Tech. Officer	CASE Category
Acosta, A. T.	MSFC/Gross, L. A.	46-Mech Engr
	MSFC/Strong, J. S.	

(62-710 113-31-14)

NAS 9-11454 California Institute of Technology **1190**
Soil mechanics investigation experiment on Apollo

Period	Obligations	
12/29/70-12/31/73	FY73:	TOTAL: \$53,520
Prin. Invest.	NASA Tech. Officer	CASE Category
Scott, R. F.	JSC/Eichelman, W. F.	19-Phys Sci, NEC

(72-910 914-40-00)

NAS 9-12270 California Institute of Technology **1191**
Lunar neutron flux experiment

Period	Obligations	
10/08/71-10/01/71	FY73:	TOTAL: \$6,916
Prin. Invest.	NASA Tech. Officer	CASE Category
Burnet, D.	JSC/Eichelman, W. F.	13-Physics

(72-910 914-40-00)

NAS 9-12585 California Institute of Technology **1192**
Design, development & testing of lunar neutron flux gradient probe prototype unit

Period	Obligations	
04/10/72-12/01/72	FY73: \$123,328	TOTAL: \$226,328
Prin. Invest.	NASA Tech. Officer	CASE Category
Burnett, D. S.	JSC/Eichelman, W. F.	31-Atmos Sci

(72-910 914-40-00)

NAS 9-12840 California Institute of Technology **1193**
Solar data collection

Period	Obligations	
06/12/72-08/31/73	FY73:	TOTAL: \$23,279
Prin. Invest.	NASA Tech. Officer	CASE Category
Zirin, H.	JSC/Da Silva, A. J.	11-Astronomy

(72-960 995-40-00)

NGL 05-002-002 California Institute of Technology **1194**
Investigation of fluid mechanics of rarefied gases utilizing large diameter shock tubes

Period	Obligations	
08/01/59-01/01/73	FY73:	TOTAL: \$805,950
Prin. Invest.	NASA Tech. Officer	CASE Category
Liepmann, H. W.	HQ-RA/Roudebush, W. H.	
	HQ-RA/Gesson, A.	41-Aero Engr

(10-740 129-00-00) (23-740 129-00-00)

NGL 05-002-003 California Institute of Technology **1195**
Basic scientific research on lunar & planetary exploration

Period	Obligations	
12/01/59-11/30/75	FY73: \$127,823	TOTAL: \$2,172,378
Prin. Invest.	NASA Tech. Officer	CASE Category
Muhleman, D. O.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	

(10-840 196-41-80) (10-840 185-00-00)

NGL 05-002-005 California Institute of Technology **1196**
Experimental & theoretical research on failure criteria for viscoelastic materials typical of solid rocket propellants

Period	Obligations	
08/10/61-12/31/73	FY73:	TOTAL: \$529,102
Prin. Invest.	NASA Tech. Officer	CASE Category
Knauss, W. G.	HQ-RP/Wasel, R. A.	13-Physics

(10-710 128-00-00) (10-710 128-32-86)

NGL 05-002-007 California Institute of Technology **1197**
Space related research in cosmic rays, interplanetary magnetic fields, solar physics, theoretical astrophysics, planetary spectroscopy & infrared astronomy

Period	Obligations	
05/20/63-09/01/73	FY73:	TOTAL: \$4,645,302
Prin. Invest.	NASA Tech. Officer	CASE Category
Neugebauer, G.	HQ-SG/Roman, N. G.	11-Astronomy
	HQ-SG/Ott, E. J.	

(10-850 188-00-00) (10-370 183-00-00) (10-840 185-00-00)

NGL 05-002-034 California Institute of Technology **1198**
Research in solar flares and the solar atmosphere

Period	Obligations	
05/18/65-08/01/74	FY73: \$175,000	TOTAL: \$1,673,353
Prin. Invest.	NASA Tech. Officer	CASE Category
Zirin, H.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	

(10-850 188-38-52)

NGL 05-002-069 California Institute of Technology **1199**
Theoretical investigation of planetary interiors

Period	Obligations	
06/12/67-08/01/75	FY73: \$60,000	TOTAL: \$509,367
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, D. L.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	

(10-810 383-09-56) (10-860 849-00-00) (10-810 383-09-50)

**NASA'S UNIVERSITY PROGRAM
CALIFORNIA (Continued)**

NGL 05-002-100 California Institute of Technology 1200
Space charge effects in current transport

Period	Obligations	
04/18/68-11/01/72	FY73: TOTAL: \$97,200	
Prin. Invest.	NASA Tech. Officer	CASE Category
Nicolett, M. A.	LARC/Kenimer	11-Astronomy
(25-750 125-00-00)	(23-750 125-00-00)	(23-740 129-00-00)

NGL 05-002-105 California Institute of Technology 1201
Shock effects in minerals

Period	Obligations	
08/16/68-03/01/75	FY73: \$54,140 TOTAL: \$496,546	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ahrens, T. J.	HQ-SM/Bryson, R. P.	32-Geological Sci
(10-810 383-09-57)	HQ-SM/Allenby, R. J.	(10-810 195-00-00)

NGL 05-002-134 California Institute of Technology 1202
Modern astronomical instrument development

Period	Obligations	
10/27/69-09/30/75	FY73: \$60,000 TOTAL: \$354,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Oke, J. B.	HQ-SG/Roman, N. G.	11-Astronomy
(10-850 188-41-51)	HQ-SG/Aucremann, M. J.	

NGL 05-002-136 California Institute of Technology 1203
Research on turbomachines

Period	Obligations	
06/02/69-04/30/75	FY73: \$40,000 TOTAL: \$206,325	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rannie, W. D.	LERC/Evvard, J. C.	46-Mech Engr
Marble, F. E.		
(22-704 501-04-03)	(22-762 132-15-05)	

NGL 05-002-140 California Institute of Technology 1204
Research in planetary astronomy

Period	Obligations	
04/11/69-03/31/76	FY73: \$37,513 TOTAL: \$287,505	
Prin. Invest.	NASA Tech. Officer	CASE Category
Munch, G.	HQ-SL/Brunk, W. E.	11-Astronomy
(10-840 196-41-80)	HQ-SL/Fellows, R. F.	(10-840 185-00-00)

NGL 05-002-187 California Institute of Technology 1205
Lunar sample analysis

Period	Obligations	
02/09/71-01/31/76	FY73: \$171,330 TOTAL: \$638,265	
Prin. Invest.	NASA Tech. Officer	CASE Category
Silver, L. T.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGL 05-002-188 California Institute of Technology 1206
Lunar sample analysis

Period	Obligations	
02/03/71-01/31/76	FY73: \$472,560 TOTAL: \$1,669,370	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wasserburg, G. J.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGL 05-002-190 California Institute of Technology 1207
Lunar sample analysis

Period	Obligations	
01/19/71-01/31/76	FY73: \$109,200 TOTAL: \$390,800	
Prin. Invest.	NASA Tech. Officer	CASE Category
Epstein, S.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGL 05-002-207 California Institute of Technology 1208
Research in infrared and X-ray astronomy

Period	Obligations	
02/18/71-09/30/75	FY73: \$95,000 TOTAL: \$285,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Neugebauer, G.	HQ-SG/Bogges, N. W.	11-Astronomy
Garmire, G.	HQ-SG/Roman, N. G.	
(10-850 188-41-55)	(10-850 188-41-59)	

NGL 05-002-229 California Institute of Technology 1209
Experimental study of flow about a stalled two-dimensional airflow

Period	Obligations	
05/11/71-05/01/74	FY73: TOTAL: \$108,020	
Prin. Invest.	NASA Tech. Officer	CASE Category
Cole, D.	HQ-PY/Carter, C. H.	41-Aero Engr
(10-371 340-00-00)	ARC/Murphy, J.	

NGR 05-002-031 California Institute of Technology 1210
Study temporal order of behavior

Period	Obligations	
09/14/64-06/30/73	FY73: TOTAL: \$449,775	
Prin. Invest.	NASA Tech. Officer	CASE Category
Strumwasser, F.	ARC/Winter, D.	51-Biology
(10-870 189-00-00)	(21-970 970-21-52)	(10-870 189-52-61)

NGR 05-002-114 California Institute of Technology 1211
Radio interferometry of Mars and Venus

Period	Obligations	
10/11/68-06/30/74	FY73: \$38,385 TOTAL: \$186,816	
Prin. Invest.	NASA Tech. Officer	CASE Category
Muhleman, D. O.	HQ-SL/Brunk, W. E.	11-Astronomy
(10-840 196-41-82)	HQ-SL/Fellows, R. F.	(10-840 196-41-86)

NGR 05-002-117 California Institute of Technology 1212
Analysis and evaluation of alternative approaches to photography from Mercury/Venus flyby

Period	Obligations	
10/01/68-09/30/73	FY73: \$82,455 TOTAL: \$291,465	
Prin. Invest.	NASA Tech. Officer	CASE Category
Murray, B. C.	HQ-SL/Dwornik, S. E.	31-Atmos Sci
(10-840 185-50-81)	HQ-SL/Allingham, J. W.	(10-840 185-00-00)

NGR 05-002-121 California Institute of Technology 1213
A study of water metabolism in neurospora crassaa

Period	Obligations	
01/01/69-12/31/73	FY73: \$48,610 TOTAL: \$163,229	
Prin. Invest.	NASA Tech. Officer	CASE Category
Horowitz, N. H.	HQ-SL/Young, R. S.	51-Biology
(10-840 192-55-64)		

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGR 05-002-142 **California Institute of Technology** **1214**
Research in solar physics

Period	Obligations
06/12/69-09/30/73	FY73: \$60,933 TOTAL: \$280,933
Prin. Invest.	NASA Tech. Officer CASE Category
Leighton, R. B.	HQ-SG/Weldon, J. M. 11-Astronomy
	HQ-SG/Oertel, G. K.

(10-850 188-38-51)

NGR 05-002-156 **California Institute of Technology** **1215**
Mars spectral reflections and polarimetric investigation

Period	Obligations
03/13/72-02/28/73	FY73: TOTAL: \$77,608
Prin. Invest.	NASA Tech. Officer CASE Category
Murray, B. C.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Allingham, J. W.

(10-840 185-50-81) (10-840 384-00-00)

NGR 05-002-158 **California Institute of Technology** **1216**
Determination of optical properties of lunar regolith from Surveyor television pictures

Period	Obligations
04/30/70-11/30/73	FY73: \$21,513 TOTAL: \$93,466
Prin. Invest.	NASA Tech. Officer CASE Category
Ingersoll, A. P.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Allenby, R. J.

(10-810 383-09-50) (10-810 383-00-00)

NGR 05-002-159 **California Institute of Technology** **1217**
Calibration and photometric analysis of Hasselbald & lunar geological exploration cameras

Period	Obligations
12/03/69-05/31/73	FY73: TOTAL: \$67,312
Prin. Invest.	NASA Tech. Officer CASE Category
Silver, L. T.	JSC/Bates, J. R. 32-Geological Sci

(72-910 914-40-00)

NGR 05-002-160 **California Institute of Technology** **1218**
Research in particles and fields

Period	Obligations
10/27/69-09/30/74	FY73: \$300,000 TOTAL: \$1,050,000
Prin. Invest.	NASA Tech. Officer CASE Category
Vogt, R. E.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Kavanagh, L. D.

(10-850 188-46-51) (10-850 385-46-00)

NGR 05-002-181 **California Institute of Technology** **1219**
Mariner 6&7 picture analysis

Period	Obligations
09/18/70-09/30/73	FY73: TOTAL: \$65,735
Prin. Invest.	NASA Tech. Officer CASE Category
Leighton, R. B.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Allingham, J. W.

(10-840 384-50-71) (10-840 384-50-80)

NGR 05-002-185 **California Institute of Technology** **1220**
Design and supervision of an infrared sky noise survey

Period	Obligations
06/25/70-12/31/72	FY73: \$25,734 TOTAL: \$292,608
Prin. Invest.	NASA Tech. Officer CASE Category
Westphal, J. A.	HQ-SL/Brunk, W. E. 11-Astronomy
	HQ-SL/Fellows, R. F.

(10-840 196-41-80) (10-840 196-00-00)

NGR 05-002-219 **California Institute of Technology** **1221**
Surface brightness measurements of supernovae remnants in the energy band 0.15-4 keV and an XUV

Period	Obligations
04/22/71-03/31/73	FY73: TOTAL: \$106,615
Prin. Invest.	NASA Tech. Officer CASE Category
Garmire, G. P.	HQ-SG/Roman, N. G. 11-Astronomy
McDonald, J.	HQ-SG/Burcher, E.

(10-850 879-11-00)

NGR 05-002-220 **California Institute of Technology** **1222**
Investigation of finite amplitude sound waves

Period	Obligations
07/03/71-01/31/73	FY73: TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Liepmann, H. W.	LARC/ 13-Physics
	LARC/Hubbard, H.

(23-740 129-01-20) (10-740 129-01-22)

NGR 05-002-225 **California Institute of Technology** **1223**
Definition phase of the Grand Tour mission energetic particle investigation for outer planet missions

Period	Obligations
04/13/71-09/30/72	FY73: TOTAL: \$47,392
Prin. Invest.	NASA Tech. Officer CASE Category
Vogt, R. E.	HQ-SL/Mitz, M. A. 13-Physics
	HQ-SL/Keller, J. W.

(10-840 186-68-68) (10-840 186-68-52)

NGR 05-002-230 **California Institute of Technology** **1224**
Definition phase of Grand Tour missions imaging investigation for outer planet missions

Period	Obligations
04/14/71-06/30/72	FY73: TOTAL: \$7,050
Prin. Invest.	NASA Tech. Officer CASE Category
Murray, B. C.	HQ-SL/Mitz, M. A. 32-Geological Sci
	HQ-SL/Keller, J. W.

(10-840 186-68-58) (10-840 186-68-52)

NGR 05-002-239 **California Institute of Technology** **1225**
Research on the ejector augmented jet flap

Period	Obligations
09/13/71-03/31/73	FY73: \$1,076 TOTAL: \$34,564
Prin. Invest.	NASA Tech. Officer CASE Category
Harris, G. L.	ARC/Aiken, T. N. 41-Aero Engr

(21-702 760-61-01)

NGR 05-002-249 **California Institute of Technology** **1226**
Development of performance criteria for advanced Viking seismic experiments

Period	Obligations
06/21/71-08/31/72	FY73: TOTAL: \$29,999
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, D. L.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Morris, E. C.

(10-840 185-50-81)

NGR 05-002-256 **California Institute of Technology** **1227**
Study and research on experimental tests of gravitation theory

Period	Obligations
02/23/72-12/31/73	FY73: \$25,000 TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Thorne, K. S.	HQ-SG/Kelsall, T. 11-Astronomy
	HQ-SG/Roman, N. G.

(10-850 188-41-54)

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGR 05-002-259 California Institute of Technology 1228
Analysis of Pioneer solar wind observations of the interplanetary medium

Period	Obligations
01/27/72-03/31/73	FY73: TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Davis, L.	HQ-SG/Kavanagh, L. D. 13-Physics
	HQ-SG/Schmerling, E. R.

(10-850 385-36-00)

NGR 05-002-281 California Institute of Technology 1229
High angular resolution of H II regions and associated galactic sources

Period	Obligations
03/01/73-02/28/74	FY73: \$20,000 TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Werner, M. W.	ARC/Cameron, R. M. 11-Astronomy
	ARC/Gillespie, C. M.

(21-850 352-02-03)

NGR 05-002-284 California Institute of Technology 1230
High angular resolution cosmic X-ray astronomy observations in the energy band 0.15-keV and XUV observations of early stars from an attitude controlled rocket

Period	Obligations
03/05/73-08/31/73	FY73: \$130,000 TOTAL: \$130,000
Prin. Invest.	NASA Tech. Officer CASE Category
Garmire, G. P.	HQ-SG/Roman, N. G. 11-Astronomy
	HQ-SG/Ott, E. J.

(10-850 879-11-00)

NGR 05-002-294 California Institute of Technology 1231
Analysis of OGO-5 and OGO-7 X-ray data

Period	Obligations
06/27/73-06/30/74	FY73: \$30,000 TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Zirin, H.	HQ-SG/Calahan, H. D. 11-Astronomy
	HQ-SG/Oertel, G. K.

(10-850 385-38-00)

NGR 05-002-302 California Institute of Technology 1232
Geology and geomorphology of Martian shield volcanos

Period	Obligations
02/19/73-04/30/74	FY73: \$12,119 TOTAL: \$12,119
Prin. Invest.	NASA Tech. Officer CASE Category
Shoemaker, E. M.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Allingham, J. W.

(10-840 185-50-01)

NGR 05-002-307 California Institute of Technology 1233
Shock compression measurements on lunar samples

Period	Obligations
04/01/73-01/31/74	FY73: \$42,000 TOTAL: \$42,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ahrens, T. J.	JSC/Harris, J. W. 32-Geological Sci

(72-910 914-40-00)

NGR 05-002-308 California Institute of Technology 1234
Mars related biological studies

Period	Obligations
03/06/73-06/30/73	FY73: \$40,855 TOTAL: \$40,855
Prin. Invest.	NASA Tech. Officer CASE Category
Horowitz, N. H.	ARC/Johnson, R. D. 51-Biology

(21-840 192-55-64)

NGR 05-002-310 California Institute of Technology 1235
Geochemistry of biomolecules

Period	Obligations
03/06/73-06/30/73	FY73: \$17,670 TOTAL: \$17,670
Prin. Invest.	NASA Tech. Officer CASE Category
Bonner, J.	ARC/Kvenvolden, K. A. 59-Life Sci, NEC

(21-840 192-55-62)

NGR 05-002-316 California Institute of Technology 1236
Planetary seismological studies

Period	Obligations
05/25/73-04/30/74	FY73: \$21,041 TOTAL: \$21,041
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, D. L.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Allingham, J. W.

(10-840 185-50-81)

NGT 05-002-009 California Institute of Technology 1237
Training of graduate students in space-related science and technology

Period	Obligations
03/27/63-08/01/72	FY73: TOTAL: \$1,225,247
Prin. Invest.	NASA Tech. Officer CASE Category
Pings, C. J.	HQ-PY/Carter, C. H. 99-Multi-Discip

(10-370 181-00-00)

NSR 05-002-071 California Institute of Technology 1238
Feasibility study for large aperture solar telescope to fly on Apollo Telescope Mount (ATM) system

Period	Obligations
01/24/67-08/31/73	FY73: \$200,000 TOTAL: \$943,808
Prin. Invest.	NASA Tech. Officer CASE Category
Zirin, H.	HQ-SG/Chase, R. H. 11-Astronomy
	HQ-SG/Oertel, G. K.

(10-980 975-84-25)

NAS 3-12426 California State University - Chico 1239
Bearing research program to eliminate friction from a nonconforming groove

Period	Obligations
04/07/69-07/01/74	FY73: TOTAL: \$24,033
Prin. Invest.	NASA Tech. Officer CASE Category
Allen, C. W.	LERC/Townsend, D. P. 49-Engr, NEC

(22-760 126-00-00) (22-762 132-15-01)

NGL 05-076-001 California State University - Chico 1240
Life formation in planetary atmospheres

Period	Obligations
02/07/71-02/01/75	FY73: \$13,590 TOTAL: \$42,118
Prin. Invest.	NASA Tech. Officer CASE Category
Regas, J. L.	ARC/Boese, R. W. 11-Astronomy

(21-840 196-41-67)

NGR 05-071-002 California State University - Fullerton 1241
Spectroscopic studies of interstellar dust

Period	Obligations
04/29/71-03/31/74	FY73: \$15,000 TOTAL: \$57,000
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, F. M.	HQ-SG/Dubin, M. 11-Astronomy
	HQ-SL/Young, R.

(10-850 188-45-53) (10-850 385-45-00)

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGR 05-071-005 California State University - Fullerton 1242
Computation of cyclic predictor-corrector methods and application to satellite orbit problems

Period		Obligations	
07/01/72-06/30/74	FY73:	TOTAL: \$20,285	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Pierce, S.	GSFC/Velez, C. E.	21-Mathematics	
(51-500 150-22-22)			

NGR 05-071-008 California State University - Fullerton 1243
Electrocyclic reactions in the interstellar media

Period		Obligations	
04/25/73-05/31/74	FY73: \$23,711	TOTAL: \$23,711	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Wegner, P. A.	HQ-SL/Young, R. S.	12-Chemistry	
Bailey, D. T.			
(10-840 192-55-61)			

NASR 188 California State University - Long Beach 1244
Development of aerospace materials for enrichment of curriculum in aerospace education for public schools

Period		Obligations	
08/01/66-09/01/77	FY73:	TOTAL: \$7,436	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Dean, C. T.	HQ-FE/	99-Multi-Discip	
(10-030 010-00-00)			

NGR 05-013-010 California State University - Long Beach 1245
Application of electron diffraction retarding potential techniques to investigation of electron reflection properties of clean and gas-covered metal surfaces

Period		Obligations	
03/12/68-06/30/73	FY73:	TOTAL: \$36,102	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Luke, K. P.	LERC/Breitwieser, R.	13-Physics	
(22-710 120-00-00)	(22-710 120-27-14)		

NGR 05-013-023 California State University - Long Beach 1246
Petrology of lunar highlands & orthosite problem

Period		Obligations	
07/17/72-09/30/73	FY73: \$3,900	TOTAL: \$3,900	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Green, J.	HQ-SM/Bryson, R. P.	32-Geological Sci	
	HQ-MA/Pomeroy, J. H.		
(10-810 383-09-53)			

NSR 05-013-008 California State University - Long Beach 1247
Materials for enrichment of curriculum in aerospace education for public schools

Period		Obligations	
04/01/66-04/01/77	FY73:	TOTAL: \$2,925	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Dean, C. T.	HQ-FE/	99-Multi-Discip	
(10-030 010-00-00)			

NGR 05-062-002 California State University - Northridge 1248
An experimental evaluation of the stresses in hollow rolling elements

Period		Obligations	
01/25/72-07/31/73	FY73:	TOTAL: \$16,353	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Nypan, L. J.	LERC/Scibbe, H. W.	46-Mech Engr	
	LERC/Anderson, W. J.		
(22-762 132-15-01)			

NGR 05-058-003 California State University - Sacramento 1249
Development of combustion stability specifications and verification procedures for liquid propellant rocket engines

Period		Obligations	
02/23/72-10/01/73	FY73:	TOTAL: \$3,234	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Reardon, F. H.	LERC/Priem, R. J.	45-Elec Engr	
(22-710 113-31-08)			

NAS 5-23249 California State University - San Diego 1250
Atmospheric transmission measurements

Period		Obligations	
05/25/73-11/25/73	FY73: \$10,000	TOTAL: \$10,000	
Prin. Invest.	NASA Tech. Officer	CASE Category	
	GSFC/	31-Atmos Sci	
(51-704 501-24-20)			

NAS 2-2216 California State University - San Fran 1251
Identification of organisms

Period		Obligations	
07/01/66-07/01/77	FY73:	TOTAL: \$7,000	
Prin. Invest.	NASA Tech. Officer	CASE Category	
	ARC/	51-Biology	
(21-870 189-00-00)			

NAS 2-7616 California State University - San Jose 1252
Meteorological observations and analysis

Period		Obligations	
06/18/73-12/31/74	FY73: \$31,866	TOTAL: \$31,866	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Miller, A.	ARC/Gloria, H. R.	31-Atmos Sci	
(21-702 770-18-03)			

NGL 05-046-002 California State University - San Jose 1253
Angular acceleration in man

Period		Obligations	
09/01/67-09/30/75	FY73: \$69,706	TOTAL: \$389,372	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Clarke, B.	ARC/Stewart, J. D.	59-Life Sci, NEC	
(21-704 501-29-03)	(21-704 501-29-02)	(21-970 970-21-11)	

NGR 05-046-011 California State University - San Jose 1254
Investigation of transport parameters relating to hyperfiltration for waste water purification

Period		Obligations	
04/01/70-09/20/73	FY73: \$52,281	TOTAL: \$125,104	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Spitze, L. A.	ARC/Wydeven, T. J.	12-Chemistry	
(21-970 970-22-23)			

NGR 05-046-015 California State University - San Jose 1255
Distribution of chlorophyll in San Francisco bodies of water

Period		Obligations	
04/08/71-12/31/73	FY73: \$20,000	TOTAL: \$52,000	
Prin. Invest.	NASA Tech. Officer	CASE Category	
Weaver, E. C.	ARC/Arvesen, J. C.	39-Env Sci, NEC	
	ARC/Millard, J. P.		
(21-680 160-75-22)			

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGR 05-046-020 California State University - San Jose 1256
Topics in the chemistry of the stratosphere and mesosphere

Period	Obligations	
05/08/72-12/31/73	FY73: TOTAL: \$4,707	
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, A.	ARC/Whitten, R. C.	31-Atmos Sci
(21-680 160-44-79)		

NAS 2-2320 Stanford University 1263
Installation of temporary laboratory and greenhouse

Period	Obligations	
07/01/66-09/01/77	FY73: TOTAL: \$8,715	
Prin. Invest.	NASA Tech. Officer	CASE Category
	ARC/	51-Biology
(21-870 189-00-00)		

NAS 1-11854 Pomona College 1257
Participation in inorganic chemistry planning for the Viking 1975 missions

Period	Obligations	
08/09/72-03/01/77	FY73: \$10,935 TOTAL: \$10,935	
Prin. Invest.	NASA Tech. Officer	CASE Category
Baird, A. K.	LARC/Soffen, G. A.	12-Chemistry
(23-840 815-20-00)		

NAS 2-3303 Stanford University 1264
Hypersonic tunnel testing

Period	Obligations	
11/01/66-11/01/77	FY73: TOTAL: \$8,003	
Prin. Invest.	NASA Tech. Officer	CASE Category
	ARC/	41-Aero Engr
(21-740 129-00-00)		

NAS 1-9682 Stanford University 1258
Participation in imaging planning for the Viking 1975 missions

Period	Obligations	
03/24/70-03/31/77	FY73: \$46,500 TOTAL: \$128,385	
Prin. Invest.	NASA Tech. Officer	CASE Category
Levinthal, E. C.	LARC/Soffen, G. A.	13-Physics
(23-840 815-20-00)		

NAS 2-4671 Stanford University 1265
Pioneer C post launch operations

Period	Obligations	
12/13/67-03/31/74	FY73: \$99,988 TOTAL: \$1,346,988	
Prin. Invest.	NASA Tech. Officer	CASE Category
Von Eshleman, V. R.	ARC/Hall, C. F.	13-Physics
(21-840 384-47-66)	ARC/Nunamaker, R. R.	
	(21-840 811-00-00) (21-840 811-12-00)	

NAS 1-9692 Stanford University 1259
Participation in the biology planning for the Viking 1975 missions

Period	Obligations	
04/13/70-03/31/77	FY73: \$3,023 TOTAL: \$17,957	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lederberg, J.	LARC/Soffen, G. A.	51-Biology
(23-840 815-20-00)	(23-840 815-00-00)	

NAS 2-5143 Stanford University 1266
Study dynamics and control of rotary wing VTOL aircraft

Period	Obligations	
11/01/68-08/31/73	FY73: TOTAL: \$129,694	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bryson, A. E., Jr.	ARC/Yaggy, P. F.	41-Aero Engr
(21-760 126-00-00)	(21-760 136-9X-00) (21-760 126-9X-00)	

NAS 1-9701 Stanford University 1260
Participation in the radio science planning for the Viking 1975 missions

Period	Obligations	
04/21/70-03/31/77	FY73: \$30,234 TOTAL: \$52,481	
Prin. Invest.	NASA Tech. Officer	CASE Category
Tyler, G. L.	LARC/Soffen, G. A.	45-Elec Engr
(23-840 815-20-00)	(23-840 815-00-00)	

NAS 2-5587 Stanford University 1267
Biology experiment hardware definition

Period	Obligations	
10/31/69-06/30/72	FY73: \$84,796 TOTAL: \$309,123	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pittendrigh, C. S.	ARC/Tremor, J. W.	51-Biology
(21-960 948-80-80)	(21-960 964-50-00)	

NAS 2-1677 Stanford University 1261
Dishwashing and other services in support of life sciences

Period	Obligations	
07/01/66-08/01/76	FY73: TOTAL: \$8,471	
Prin. Invest.	NASA Tech. Officer	CASE Category
	ARC/	51-Biology
(21-870 189-00-00)		

NAS 2-6158 Stanford University 1268
Study aerodynamic noise

Period	Obligations	
09/09/70-09/09/73	FY73: \$39,914 TOTAL: \$119,539	
Prin. Invest.	NASA Tech. Officer	CASE Category
Karamcheti, K. K.	ARC/Vause, C. R.	41-Aero Engr
(21-704 501-9X-00)	ARC/Schmitz, F. H.	

NAS 2-1750 Stanford University 1262
Usage of hypersonic wind tunnel

Period	Obligations	
10/01/66-10/01/77	FY73: TOTAL: \$9,900	
Prin. Invest.	NASA Tech. Officer	CASE Category
	ARC/	42-Astro Engr
(21-7002110-)	(21-750 125-00-00)	

NAS 2-6217 Stanford University 1269
Determination of rat plasma hormone levels

Period	Obligations	
11/17/70-11/01/71	FY73: \$280 TOTAL: \$4,020	
Prin. Invest.	NASA Tech. Officer	CASE Category
Davidson, J.	ARC/Danellis, J. V.	59-Life Sci, NEC
(21-770 127-49-37)	ARC/Winget, C. M.	

**NASA'S UNIVERSITY PROGRAM
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NAS 2-6234 **Stanford University** **1270**
Pathologic changes in rats dogs & rabbits due to prolonged high-gravity
Period *Obligations*
11/24/70-12/01/71 FY73: TOTAL: \$24,259
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bensch, K. G. ARC/Oyama, J. 42-Astro Engr
ARC/Platt, W. T.
(21-770 708-40-01)

NAS 2-6332 **Stanford University** **1271**
Drosophila biology in space
Period *Obligations*
02/05/71-10/01/71 FY73: TOTAL: \$25,790
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Herman, M. M. ARC/Hewitt, J. E. 59-Life Sci, NEC
ARC/Miquel, J.
(21-870 883-00-00)

NAS 2-6491 **Stanford University** **1272**
Research on integrated circuits for gas chromatography
Period *Obligations*
06/10/71-10/01/71 FY73: TOTAL: \$3,707
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wise, K. D. ARC/Donaldson, R. W. 45-Elec Engr
ARC/Tombs, N. C.
(21-870 189-55-65)

NAS 2-6706 **Stanford University** **1273**
Electron microscope services
Period *Obligations*
12/06/71-02/06/74 FY73: \$39,999 TOTAL: \$59,999
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bensch, K. G. ARC/Miquel, J. 51-Biology
(21-970 970-21-62) (21-970 970-21-63)

NAS 2-7126 **Stanford University** **1274**
Venus atmosphere propagation study
Period *Obligations*
06/30/72-10/01/72 FY73: TOTAL: \$13,194
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Von Eshleman, V. R. ARC/Grant, T. 31-Atmos Sci
(21-840 186-68-60)

NAS 2-7199 **Stanford University** **1275**
Study short haul aircraft systems
Period *Obligations*
09/27/72-07/01/73 FY73: \$21,500 TOTAL: \$21,500
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shevill, R. S. ARC/Kenyon, G. C. 49-Engr, NEC
ARC/Galloway, T. L.
(15-701 791-93-03)

NAS 2-7205 **Stanford University** **1276**
Veterinary services
Period *Obligations*
09/19/72-08/01/73 FY73: \$1,911 TOTAL: \$1,911
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Snyder, S. B. ARC/Dunlap, W. A. 59-Life Sci, NEC
Soave, O. A. (21-970 970-21-25) (21-970 970-21-45)
(21-970 970-21-16)

NAS 2-7637 **Stanford University** **1277**
Adrenergic activity during bedrest
Period *Obligations*
06/11/73-08/01/73 FY73: \$12,000 TOTAL: \$12,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Barchas, J. D. ARC/Danellis, J. 53-Other Medical
(21-970 970-21-45)

NAS 3-14336 **Stanford University** **1278**
Research for the fundamental study of full-coverage film cooling
Period *Obligations*
07/13/71-07/11/73 FY73: TOTAL: \$94,940
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kays, W. M. LERC/Colladay, R. S. 46-Mech Engr
(22-762 764-74-05)

NAS 3-14362 **Stanford University** **1279**
The design and development of low cost ground receiving systems suitable for television reception from satellites
Period *Obligations*
04/07/71-04/01/72 FY73: \$22,114 TOTAL: \$124,579
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lusignan, B. B. LERC/Alexovich, R. 45-Elec Engr
(22-620 164-21-52)

NAS 5-9309 **Stanford University** **1280**
VLF polarization experiment for the Orbiting Geophysical Observatory, mission F/OGO-F/
Period *Obligations*
03/31/66-06/01/72 FY73: TOTAL: \$1,193,400
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Helliwell, R. A. GSFC/Meece, K. J. 13-Physics
(51-850 841-00-00) (51-850 841-12-00) (51-850 385-50-00)

NAS 5-10102 **Stanford University** **1281**
Radio propagation studies of the ionosphere
Period *Obligations*
06/27/66-02/01/77 FY73: TOTAL: \$395,897
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Villard, O. G. GSFC/Baker, J. 45-Elec Engr
(51-620 630-00-00)

NAS 5-11387 **Stanford University** **1282**
Research in support of RAE satellite observations of solar and magnetosphere radio noise
Period *Obligations*
04/19/71-01/30/73 FY73: TOTAL: \$22,609
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Peterson, A. M. GSFC/Stone, R. G. 11-Astronomy
Vesecky, J. F. (51-850 877-12-00)

NAS 5-21684 **Stanford University** **1283**
Study the design of a drag-free satellite
Period *Obligations*
12/09/71-12/08/72 FY73: TOTAL: \$80,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Breakwell, J. V. GSFC/Lidston, J. M. 42-Astro Engr
Debra, D. B. GSFC/Kant, S.
Powell, J. D. (51-620 682-10-60) (51-680 683-71-09)

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NAS 5-21714 **Stanford University** **1284**
Development of minimum thruster control laws and selection of orbits for a geodesy drag-free satellite

Period	Obligations	
04/26/72-04/26/73	FY73:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Breakwell, J. V.	GSFC/Farquhar, R. W.	42-Astro Engr
Debra, D. B.	GSFC/Lefferts, E. J.	
(51-680 683-00-00)	(51-680 683-71-09)	

NAS 5-21733 **Stanford University** **1285**
Field studies in support of Nimbus E space surface composition mapping radiometer

Period	Obligations	
04/26/72-04/26/73	FY73:	TOTAL: \$14,973
Prin. Invest.	NASA Tech. Officer	CASE Category
Lyon, R. J.	GSFC/Hovis, W. A.	32-Geological Sci
(51-680 604-42-00)		

NAS 5-21775 **Stanford University** **1286**
Structural and lithologic study of northern coast range using ERTS-A data

Period	Obligations	
06/20/72-12/31/73	FY73: \$17,000	TOTAL: \$26,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rich, E. I.	GSFC/Crump, E. W.	32-Geological Sci
(51-680 641-14-03)	(51-680 641-14-00)	

NAS 5-21884 **Stanford University** **1287**
ERTS data user

Period	Obligations	
11/03/72-11/01/74	FY73: \$42,000	TOTAL: \$42,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lyon, R. P.	GSFC/Crump, E. W.	32-Geological Sci
(51-680 641-14-03)		

NAS 5-23117 **Stanford University** **1288**
Systems definition /phase B/ studies for the EGRET experiment on the HEAO-B spacecraft

Period	Obligations	
06/22/72-06/30/74	FY73: \$336,000	TOTAL: \$408,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hofstadter, R.	GSFC/Wrublik, K. P.	11-Astronomy
(51-850 832-12-00)		

NAS 5-23205 **Stanford University** **1289**
Research in satellite observations of solar & magnetospheric radio noise

Period	Obligations	
03/16/73-03/16/74	FY73: \$24,923	TOTAL: \$24,923
Prin. Invest.	NASA Tech. Officer	CASE Category
Peterson, A. M.	GSFC/Stone, R. G.	13-Physics
Veasey, J. F.		
(51-850 861-52-00)	(51-850 877-12-00)	

NAS 8-25705 **Stanford University** **1290**
Fabrication of a high precision star tracking telescope for relativity experiment

Period	Obligations	
04/09/70-07/01/72	FY73:	TOTAL: \$42,982
Prin. Invest.	NASA Tech. Officer	CASE Category
Everitt, C.	MSFC/Decher, R.	11-Astronomy
(62-850 188-00-00)		

NAS 8-27333 **Stanford University** **1291**
Fabrication of an Electronic Suspension Subsystem (ESS) for a cryogenic electrostatically suspended gyroscope for the relativity experiment

Period	Obligations	
05/04/71-08/31/72	FY73: \$12,000	TOTAL: \$51,333
Prin. Invest.	NASA Tech. Officer	CASE Category
Debra, D. B.	MSFC/Decher, R.	13-Physics
	MSFC/Jones, R. E.	
(62-850 188-41-54)		

NAS 8-27406 **Stanford University** **1292**
High energy gamma ray spark chamber telescope

Period	Obligations	
05/20/71-02/01/72	FY73:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hofstadter, R.	MSFC/Power, J. A.	11-Astronomy
(62-850 188-78-53)		

NAS 9-5632 **Stanford University** **1293**
Active seismic experiment for ALSEP

Period	Obligations	
02/03/66-12/31/73	FY73: \$118,468	TOTAL: \$692,688
Prin. Invest.	NASA Tech. Officer	CASE Category
Kovach, R. L.	JSC/Weeks, E.	39-Env Sci, NEC
(72-910 914-40-00)		

NAS 9-7313 **Stanford University** **1294**
Infrared spectrometry studies

Period	Obligations	
06/29/67-12/31/72	FY73:	TOTAL: \$340,565
Prin. Invest.	NASA Tech. Officer	CASE Category
Lyon, R. J.	JSC/Hensley, W.	32-Geological Sci
(72-680 160-00-00)	(72-880 169-00-00)	(72-680 160-75-56)

NAS 9-10579 **Stanford University** **1295**
Scientific support for bistatic radar equipment (PEIMENT)

Period	Obligations	
04/28/70-06/30/73	FY73: \$84,851	TOTAL: \$422,113
Prin. Invest.	NASA Tech. Officer	CASE Category
Howard, H. T.	JSC/Lafferty, P. E.	39-Env Sci, NEC
(72-910 914-49-00)		

NAS 9-13357 **Stanford University** **1296**
Feasibility of using S-191 infrared spectra for geological studies from space Skylab EREP investigation no. 9641

Period	Obligations	
05/23/73-06/30/74	FY73: \$63,000	TOTAL: \$63,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lyon, R. J.	JSC/White, T. T.	19-Phys Sci, NEC
(72-960 948-63-86)		

NASW 2216 **Stanford University** **1297**
Biomedical technology transfer.

Period	Obligations	
05/19/71-07/01/72	FY73:	TOTAL: \$104,594
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-KT/	99-Multi-Discip
(10-250 141-93-00)	(10-750 125-00-00)	

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NGL 05-020-007 **Stanford University** **1298**
Guidance and control of flight vehicles
Period *Obligations*
08/17/72-08/14/75 FY73: \$57,019 TOTAL: \$1,107,064
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bryson, A. E. ARC/Doolin, B. F. 41-Aero Engr
Franklin, G. F.
(21-704 501-03-11)

NGL 05-020-008 **Stanford University** **1299**
Investigation of experimental techniques for measurement of low frequency electromagnetic phenomena in the atmosphere
Period *Obligations*
09/01/61-02/29/76 FY73: \$145,000 TOTAL: \$884,443
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Helliwell, R. A. HQ-SG/Schmerling, E. R. 13-Physics
HQ-SG/Hallenbeck, D. R.
(10-850 385-36-00) (10-850 188-36-57) (10-850 188-39-54)

NGL 05-020-014 **Stanford University** **1300**
Theoretical & experimental radio & radar studies of lunar, planetary ionospheres, atmospheres, & surfaces of sun & interplanetary medium
Period *Obligations*
04/30/63-09/01/74 FY73: \$180,327 TOTAL: \$2,209,371
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Von Eshleman, V. R. HQ-SL/Fellows, R. F. 31-Atmos Sci
HQ-SG/Schmerling, E. R.
(10-840 185-47-80) (10-850 188-36-57)

NGL 05-020-015 **Stanford University** **1301**
Gravitational & resonance experiments on low energy free electrons & positrons
Period *Obligations*
03/12/63-01/01/73 FY73: TOTAL: \$457,898
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fairbanks, W. M. HQ-NS/Harrison, H. 13-Physics
(10-740 129-00-00)

NGL 05-020-073 **Stanford University** **1302**
Study stability & stochastic optimal control
Period *Obligations*
01/01/65-10/31/73 FY73: TOTAL: \$257,393
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kalman, R. E. HQ-RE/Janow, C. 49-Engr, NEC
ARC/Stewart, E.
(10-750 125-00-00) (21-750 125-19-01) (10-750 125-19-01)

NGL 05-020-103 **Stanford University** **1303**
Investigation of laser dynamics, modulation and control by means of intra-cavity time varying perturbation
Period *Obligations*
05/16/66-03/01/75 FY73: \$90,000 TOTAL: \$697,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gierasch, P. J. HQ-SL/Fellows, R. F. 13-Physics
Siegman, A. E. HQ-SL/Hipsher, H. F.
(10-750 125-00-00) (10-750 115-22-01) (10-750 125-22-14)

NGL 05-020-134 **Stanford University** **1304**
Mass transfer to a turbulent boundary layer with step changes in boundary conditions and variable free-stream velocity
Period *Obligations*
02/24/66-12/01/74 FY73: TOTAL: \$251,220
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kays, W. M. LERC/Graham, R. W. 46-Mech Engr
Moffat, R. J.
(22-740 129-00-00) (22-762 132-15-05) (22-740 129-01-21)

NGL 05-020-165 **Stanford University** **1305**
Theoretical & experimental investigations of collective microwave
Period *Obligations*
05/05/66-12/01/72 FY73: TOTAL: \$375,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
King, G. GSFC/Hughes, W. E. 19-Phys Sci, NEC
(25-750 125-00-00) (51-750 125-00-00)

NGL 05-020-176 **Stanford University** **1306**
Investigation of space-related whistler propagation phenomena in laboratory plasmas
Period *Obligations*
03/02/67-06/01/74 FY73: \$110,000 TOTAL: \$599,800
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Crawford, F. W. HQ-SG/Schmerling, E. R. 31-Atmos Sci
HQ-SG/Hallenbeck, D. R.
(10-850 188-36-57)

NGL 05-020-223 **Stanford University** **1307**
Biomechanics within the field of cardiovascular physiology
Period *Obligations*
09/18/67-06/01/73 FY73: TOTAL: \$482,486
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Anliker, M. ARC/Sandler, H. 13-Physics
(21-770 127-00-00) (21-770 127-49-40) (21-870 189-00-00)

NGL 05-020-232 **Stanford University** **1308**
Evaluation, and developmental studies of possible active seismic experiments during the post-Apollo period
Period *Obligations*
06/16/67-06/30/74 FY73: TOTAL: \$177,468
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kovach, R. L. HQ-SM/Bryson, R. P. 39-Env Sci, NEC
HQ-SM/Allenby, R. J.
(10-840 185-00-00) (10-810 195-00-00)

NGL 05-020-242 **Stanford University** **1309**
Research on the effects of structure upon the electronic behavior of materials
Period *Obligations*
03/26/68-01/31/76 FY73: \$20,038 TOTAL: \$160,129
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Little, W. A. HQ-RW/Weinberg, I. 13-Physics
JPL/Rembaum, A.
(10-704 502-01-02) (10-740 129-03-43) (10-740 129-00-00)

NGL 05-020-243 **Stanford University** **1310**
Refined methods of aeroelastic analysis and optimization
Period *Obligations*
08/29/67-08/01/74 FY73: \$10,000 TOTAL: \$70,630
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Ashley, H. LARC/Rainey, A. G. 41-Aero Engr
LARC/Reed, W. H., III
(23-704 501-22-04) (23-760 126-14-14) (23-760 136-14-02)

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGL 05-020-250 **Stanford University** **1311**
Study of abiogenic reaction mechanisms by cyclotron resonance spectroscopy

Period	Obligations	
10/03/67-07/01/73	FY73: TOTAL: \$120,023	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kuhlmann, K. F.	ARC/Ponnamperuma, C. A.	12-Chemistry
(21-870 189-00-00)	(21-870 189-55-61)	

NGL 05-020-272 **Stanford University** **1312**
Theoretical study of the solar atmosphere and the structure of active regions

Period	Obligations	
06/07/68-10/01/74	FY73: \$76,500 TOTAL: \$522,500	
Prin. Invest.	NASA Tech. Officer	CASE Category
Sturrock, P. A.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-53)		

NGL 05-020-275 **Stanford University** **1313**
A study of the fluid mechanics of edgetones

Period	Obligations	
02/08/68-12/01/72	FY73: TOTAL: \$128,443	
Prin. Invest.	NASA Tech. Officer	CASE Category
Karamcheti, K.	HQ-RL/	13-Physics
(10-740 129-00-00)	(23-740 129-01-20)	(23-740 129-00-00)

NGL 05-020-305 **Stanford University** **1314**
Evaluation of the cardiovascular system during various circulatory stresses

Period	Obligations	
09/17/68-09/01/74	FY73: \$132,935 TOTAL: \$676,305	
Prin. Invest.	NASA Tech. Officer	CASE Category
Harrison, D. C.	ARC/Sandler, H.	52-Clinical Med
(21-970 970-21-12)		

NGL 05-020-326 **Stanford University** **1315**
Influence of chronic and repeated stress on the pituitary adrenal system and behavior

Period	Obligations	
02/26/69-08/01/73	FY73: TOTAL: \$105,781	
Prin. Invest.	NASA Tech. Officer	CASE Category
Levine, S.	ARC/Ernikos-Danells, J. V.	52-Clinical Med
(21-770 127-00-00)	(21-770 127-49-37)	

NGL 05-020-397 **Stanford University** **1316**
Dynamics of mechanical systems coupled to energy sources

Period	Obligations	
02/17/70-03/01/73	FY73: TOTAL: \$40,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Herrmann, G.	LARC/Reed, W. H.	41-Aero Engr
	LARC/Runyan, H. L.	
(23-760 126-00-00)		

NGL 05-020-401 **Stanford University** **1317**
Research on pressure sensors for biomedical instrumentation

Period	Obligations	
11/26/69-09/01/72	FY73: TOTAL: \$80,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Angell, J. B.	ARC/Fryer, T. B.	46-Mech Engr
(21-750 125-00-00)		

NGL 05-020-420 **Stanford University** **1318**
Stanford-NASA cooperative program in computational aspects of fluid mechanics

Period	Obligations	
02/20/70-12/15/73	FY73: \$1,500 TOTAL: \$298,700	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ferziger, J.	ARC/Chapman, D. R.	46-Mech Engr
(21-704 501-06-01)	(21-760 126-13-10)	

NGL 05-020-498 **Stanford University** **1319**
Modal suppression to flutter control

Period	Obligations	
04/01/71-04/01/77	FY73: \$50,000 TOTAL: \$170,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
McIntosh, S. C., Jr.	FRC/Kordes, E. E.	41-Aero Engr
(24-760 136-14-02)	(24-760 126-63-10)	

NGL 05-020-582 **Stanford University** **1320**
Abiotic origins of optical activity

Period	Obligations	
04/18/72-04/30/76	FY73: \$56,411 TOTAL: \$135,281	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bonner, W. A.	ARC/Kvenvolden, K. A.	
	HQ-SL/Young, R. S.	59-Life Sci, NEC
(10-970 970-14-01)		

NGR 05-020-001 **Stanford University** **1321**
Ionospheric research utilizing satellite radio transmissions

Period	Obligations	
07/20/59-08/15/73	FY73: \$60,000 TOTAL: \$1,095,622	
Prin. Invest.	NASA Tech. Officer	CASE Category
Darosa, A. V.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Hallenbeck, D. R.	
(10-850 385-36-00)		

NGR 05-020-004 **Stanford University** **1322**
Cytochemical studies of planetary microorganisms

Period	Obligations	
04/01/60-08/31/73	FY73: \$180,000 TOTAL: \$4,015,587	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lederberg, J.	HQ-SL/Young, R. S.	51-Biology
Levinthal, E. C.		
Djerassi, C.		
(10-840 192-55-63)		

NGR 05-020-019 **Stanford University** **1323**
Performance of a gyro test of general relativity in a satellite & development of associated control technology

Period	Obligations	
05/13/64-10/01/73	FY73: \$395,000 TOTAL: \$2,464,075	
Prin. Invest.	NASA Tech. Officer	CASE Category
Fairbanks, W. M.	MSFC/Potter, R. A.	13-Physics
Everitt, C. W.		
Debra, D. B.		
(62-850 188-41-54)		

NGR 05-020-066 **Stanford University** **1324**
Photoemission studies of solids

Period	Obligations	
05/12/65-04/30/73	FY73: TOTAL: \$259,510	
Prin. Invest.	NASA Tech. Officer	CASE Category
Spicer, W. E.	HQ-SG/Ott, E. J.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-00-00)	(10-850 188-41-57)	

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NGR 05-020-267 **Stanford University** **1325**
Investigation of lunar analogues of fluvial landscapes and possible implications

Period	FY73:	Obligations
02/19/68-12/01/71		TOTAL: \$36,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Howard, A. D.	HQ-SL/	32-Geological Sci
(10-840 185-00-00)		

NGR 05-020-288 **Stanford University** **1326**
Magnetosphere studies on satellite VLF/LF data acquired on OGO-I and OGO-II

Period	FY73:	Obligations
05/28/68-04/30/73		TOTAL: \$398,568
Prin. Invest.	NASA Tech. Officer	CASE Category
Helliwell, R. A.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Kavanagh, L. D., Jr.	
(10-850 385-00-00)	(10-850 385-39-00)	

NGR 05-020-330 **Stanford University** **1327**
Dynamics of solar wind and its interaction with bodies in solar system

Period	FY73:	Obligations
06/09/69-09/30/73		TOTAL: \$110,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Spreiter, J. R.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 188-00-00)	(10-850 188-36-53)	(10-850 188-36-55)

NGR 05-020-335 **Stanford University** **1328**
Photochemical and photobiological effects of extreme ultraviolet radiation

Period	FY73:	Obligations
06/04/69-08/31/73		TOTAL: \$42,857
Prin. Invest.	NASA Tech. Officer	CASE Category
Giese, A. C.	ARC/Ponnamferuma, C. A.	12-Chemistry
(10-870 189-00-00)	(21-870 189-00-00)	(21-740 129-03-22)

NGR 05-020-345 **Stanford University** **1329**
Research in remote control

Period	FY73:	Obligations
06/09/69-06/30/73	\$28,500	TOTAL: \$72,055
Prin. Invest.	NASA Tech. Officer	CASE Category
Adams, J. L.	ARC/Jones, J. L.	49-Engr, NEC
Verplank, W. L.		
(21-970 970-23-20)		

NGR 05-020-405 **Stanford University** **1330**
Electronic properties of hydrogen cyanide its polymers of pyrroles and ferric porphyrins

Period	FY73:	Obligations
02/11/70-10/31/73	\$14,000	TOTAL: \$56,478
Prin. Invest.	NASA Tech. Officer	CASE Category
Loew, G. H.	ARC/Chang, S.	59-Life Sci, NEC
Lederberg, J.	ARC/Kenvolden, K. A.	
(21-704 501-29-02)	(21-840 192-55-62)	

NGR 05-020-407 **Stanford University** **1331**
Analysis of solar wind structural data acquired from Pioneer and Mariner spacecraft

Period	FY73:	Obligations
12/14/70-11/30/73	\$59,225	TOTAL: \$185,606
Prin. Invest.	NASA Tech. Officer	CASE Category
Craft, T. A.	HQ-SG/Schmerling, E. R.	39-Env Sci, NEC
	HQ-SG/Hallenbeck, D. R.	
(10-850 385-36-00)		

NGR 05-020-435 **Stanford University** **1332**
Neuronal analysis of visual perception

Period	FY73:	Obligations
01/01/70-01/31/74	\$3,500	TOTAL: \$16,845
Prin. Invest.	NASA Tech. Officer	CASE Category
Chow, K. L.	ARC/Mehler, W. R.	59-Life Sci, NEC
Sutton, R.		
(21-970 970-21-53)	(21-970 970-21-63)	

NGR 05-020-452 **Stanford University** **1333**
Instrument development for high energy physics experiment in space

Period	FY73:	Obligations
06/09/70-06/30/73	\$162,499	TOTAL: \$387,499
Prin. Invest.	NASA Tech. Officer	CASE Category
Hofstadter, R.	HQ-SG/Opp, A. G.	11-Astronomy
	HQ-SG/Kavanagh, L. D.	
(10-850 188-46-52)		

NGR 05-020-456 **Stanford University** **1334**
Effects of altered gravitational stress on fluid balance and circulation of blood

Period	FY73:	Obligations
05/13/70-09/30/73	\$45,447	TOTAL: \$115,880
Prin. Invest.	NASA Tech. Officer	CASE Category
Luetscher, J. A.	ARC/Greenleaf, J. E.	53-Other Medical
(21-970 970-21-14)		

NGR 05-020-507 **Stanford University** **1335**
Analysis of halo satellite orbits as a mean of communication for backside lunar travers missions

Period	FY73:	Obligations
05/25/71-06/30/73		TOTAL: \$28,678
Prin. Invest.	NASA Tech. Officer	CASE Category
Breakwell, J. V.	GSFC/Farquhar, R. W.	42-Astro Engr
(10-810 195-42-66)		

NGR 05-020-510 **Stanford University** **1336**
Galactic and extra galactic infrared line emission

Period	FY73:	Obligations
03/31/71-03/31/74	\$15,000	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Petrosian, V.	HQ-SG/Boggeess, N. W.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-41-55)		

NGR 05-020-512 **Stanford University** **1337**
Plasma phenomena at magnetic neutral points

Period	FY73:	Obligations
05/11/71-09/30/72		TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Sturrah, P.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-53)		

**NASA'S UNIVERSITY PROGRAM
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NGR 05-020-514			Stanford University	1338
Complex fixation by nitrogen in aqueous solution				
<i>Period</i>		<i>Obligations</i>		
02/25/71-02/28/74	FY73: \$28,500	TOTAL: \$78,950		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Taube, H.	ARC/Billingham, J.	12-Chemistry		
	ARC/Leon, H.			
(21-970 970-21-35)				
NGR 05-020-526			Stanford University	1339
Research program in air transport				
<i>Period</i>		<i>Obligations</i>		
03/25/71-08/31/74	FY73:	TOTAL: \$130,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Bryson, A. R.	ARC/Kelley, M.	41-Aero Engr		
(21-760 721-05-10) (21-760 126-13-10)				
NGR 05-020-529			Stanford University	1340
Definition phase of Grand Tour missions radio science investigation for outer planet missions				
<i>Period</i>		<i>Obligations</i>		
04/13/71-10/31/72	FY73:	TOTAL: \$5,565		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Tyler, G. L.	HQ-SL/Mitz, M. A.	31-Atmos Sci		
	HQ-SL/Keller, J. W.			
(10-840 186-68-52)				
NGR 05-020-530			Stanford University	1341
Definition phase of the Grand Tour missions radio science investigation for outer planet missions				
<i>Period</i>		<i>Obligations</i>		
04/13/71-10/01/72	FY73:	TOTAL: \$15,117		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Von Eshleman, V. R.	HQ-SL/Mitz, M. A.	12-Chemistry		
	HQ-SL/Keller, J. W.			
(10-840 186-68-52) (10-840 186-68-68)				
NGR 05-020-543			Stanford University	1342
Research miniature gas analysis systems				
<i>Period</i>		<i>Obligations</i>		
05/26/71-02/28/73	FY73:	TOTAL: \$35,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Angell, J. B.	ARC/Donaldson, R.	19-Phys Sci, NEC		
(21-870 189-55-65) (21-770 127-53-40)				
NGR 05-020-547			Stanford University	1343
Instructional strategies for optimizing the learning process				
<i>Period</i>		<i>Obligations</i>		
09/10/71-09/30/73	FY73: \$44,980	TOTAL: \$92,343		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Atkinson, R. C.	ARC/Tanner, T. A., Jr.	69-Psych, NEC		
	ARC/Patton, R. M.			
(21-970 970-21-51)				
NGR 05-020-549			Stanford University	1344
Liquid metal embrittlement				
<i>Period</i>		<i>Obligations</i>		
08/12/71-08/31/73	FY73:	TOTAL: \$31,299		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Tiller, W. A.	ARC/Nelson, H. G.	47-Materials Engr		
	ARC/Williams, D. P.			
(21-740 134-03-21)				
NGR 05-020-559			Stanford University	1345
Structure of solar magnetic and velocity fields				
<i>Period</i>		<i>Obligations</i>		
03/22/72-08/31/73	FY73: \$80,000	TOTAL: \$140,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Wilcox, J.	HQ-SG/Weldon, J. M.	11-Astronomy		
	HQ-SG/Oertel, G. K.			
(10-850 188-38-52)				
NGR 05-020-569			Stanford University	1346
Interaction of atomic beams and gaseous environments with the surface of solid materials				
<i>Period</i>		<i>Obligations</i>		
09/28/71-09/30/73	FY73: \$45,435	TOTAL: \$89,372		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Pound, G. M.	ARC/Poppa, H. R.	13-Physics		
(21-704 502-01-01)				
NGR 05-020-575			Stanford University	1347
Bioelectric signal analysis & measurement				
<i>Period</i>		<i>Obligations</i>		
11/09/71-10/01/73	FY73: \$45,000	TOTAL: \$80,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Lai, D. C.	ARC/Anliker, J. E.	45-Elec Engr		
(21-970 970-21-53)				
NGR 05-020-576			Stanford University	1348
Study sleep mechanisms				
<i>Period</i>		<i>Obligations</i>		
11/23/71-09/01/72	FY73:	TOTAL: \$49,583		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Barckas, J. D.	JSC/Schumate, W. H.	69-Psych, NEC		
	Dement, W. C.			
(72-910 914-51-00)				
NGR 05-020-578			Stanford University	1349
Radiorespirometry studies				
<i>Period</i>		<i>Obligations</i>		
01/10/72-12/31/73	FY73: \$40,131	TOTAL: \$60,431		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Degrazia, J. A.	ARC/Feller, D. D.	52-Clinical Med		
	ARC/Neville, E. D.			
(21-970 970-21-16)				
NGR 05-020-579			Stanford University	1350
Experiment definition for the orbital plasma physics and environmental perturbation laboratory				
<i>Period</i>		<i>Obligations</i>		
03/07/72-01/14/73	FY73:	TOTAL: \$10,823		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Helliwell, R. A.	MSFC/Roberts, W. T.	39-Env Sci, NEC		
(62-980 975-84-39)				
NGR 05-020-583			Stanford University	1351
Nonequilibrium shock wave structure kinetics of nitric oxide formation & decomposition				
<i>Period</i>		<i>Obligations</i>		
11/09/71-12/31/73	FY73: \$30,490	TOTAL: \$70,584		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		
Kruger, C. H.	ARC/Presley, L. L.	41-Aero Engr		
	ARC/Rubenstein, M. W.			
(21-704 502-37-02) (21-704 502-07-01) (21-742 117-07-04)				

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGR 05-020-592 **Stanford University** **1352**
Navigation and guidance for solar electric missions

Period	Obligations	
06/01/72-05/31/73	FY73: TOTAL: \$35,190	
Prin. Invest.	NASA Tech. Officer	CASE Category
Breakwell, J. V.	GSFC/Barbieri, R. W.	42-Astro Engr
(51-830 180-06-50)		

NGR 05-020-615 **Stanford University** **1353**
Ultrasonic Doppler measurement of renal artery blood flow

Period	Obligations	
05/26/72-06/30/74	FY73: \$56,700 TOTAL: \$116,700	
Prin. Invest.	NASA Tech. Officer	CASE Category
Meindl, J. D.	ARC/Sandler, H.	53-Other Medical
(21-970 970-23-30)		

NGR 05-020-622 **Stanford University** **1354**
Computation of turbulent flows

Period	Obligations	
07/20/72-07/14/73	FY73: \$50,217 TOTAL: \$50,217	
Prin. Invest.	NASA Tech. Officer	CASE Category
Reynolds, W. C.	ARC/Chapman, D. R.	41-Aero Engr
	ARC/Rubenstein, M. W.	
(21-704 501-06-02)		

NGR 05-020-632 **Stanford University** **1355**
Analytical methodology for biochemical monitoring

Period	Obligations	
05/29/73-04/30/74	FY73: \$60,000 TOTAL: \$60,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lederberg, J.	JSC/Rummel, J.	53-Other Medical
(72-970 970-51-45)		

NGR 05-020-633 **Stanford University** **1356**
Lunar sample analysis

Period	Obligations	
02/01/73-01/31/74	FY73: \$21,460 TOTAL: \$21,460	
Prin. Invest.	NASA Tech. Officer	CASE Category
Nur, A.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 05-020-634 **Stanford University** **1357**
Biomedical technology transfer

Period	Obligations	
12/07/72-09/01/73	FY73: \$79,976 TOTAL: \$79,976	
Prin. Invest.	NASA Tech. Officer	CASE Category
Harrison, D. C.	ARC/Sandler, H.	52-Clinical Med
(21-250 141-93-00)		

NGR 05-020-644 **Stanford University** **1358**
High resolution observations of Jovian magnetospheric microwave synchrotron emission

Period	Obligations	
01/01/73-12/31/73	FY73: \$23,453 TOTAL: \$23,453	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bracewell, R. N.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-41-82)		

NGR 05-020-649 **Stanford University** **1359**
Study of lunar and planetary surfaces

Period	Obligations	
03/06/73-12/31/73	FY73: \$16,520 TOTAL: \$16,520	
Prin. Invest.	NASA Tech. Officer	CASE Category
Howard, H. T.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	
(10-840 185-50-81)		

NGR 05-020-659 **Stanford University** **1360**
Satellite telecommunications research

Period	Obligations	
12/19/72-12/01/73	FY73: \$65,000 TOTAL: \$65,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lusignan, B. B.	ARC/Lumb, D. R.	45-Elec Engr
	Dunn, D. A.	
	MSFC/Wojtalik, F. S.	
(62-620 164-06-9X)		

NGR 05-020-662 **Stanford University** **1361**
Fracture mechanics of fiber-reinforced composite materials

Period	Obligations	
03/13/73-03/31/74	FY73: \$34,991 TOTAL: \$34,991	
Prin. Invest.	NASA Tech. Officer	CASE Category
Barnett, D. M.	ARC/Williams, D. P.	47-Materials Engr
(21-704 501-21-21)		

NGR 05-020-663 **Stanford University** **1362**
Investigation of effects of asymmetry on dynamic stability of aircraft

Period	Obligations	
01/18/73-04/30/74	FY73: \$23,803 TOTAL: \$23,803	
Prin. Invest.	NASA Tech. Officer	CASE Category
Powell, J. D.	ARC/Thomas, C. L.	41-Aero Engr
	Debra, D. B.	
	Shevell, R. S.	
(21-702 760-64-01)		

NGR 05-020-671 **Stanford University** **1363**
Mechanical behavior of dispersion-strengthened materials at elevated temperatures

Period	Obligations	
06/05/73-06/04/74	FY73: \$29,259 TOTAL: \$29,259	
Prin. Invest.	NASA Tech. Officer	CASE Category
Sherby, O. D.	LERC/Whittenberger, J. D.	47-Materials Engr
	Shyne, J. C.	
(22-704 502-01-06)		

NGR 05-020-676 **Stanford University** **1364**
Research program in acoustics

Period	Obligations	
07/01/73-06/30/76	FY73: \$150,000 TOTAL: \$150,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Karamcheti, K.	ARC/Hickey, D. H.	13-Physics
(21-704 501-15-81)		

NGT 05-020-016 **Stanford University** **1365**
Training of graduate students in space-related science and technology

Period	Obligations	
04/03/63-08/01/72	FY73: TOTAL: \$1,242,525	
Prin. Invest.	NASA Tech. Officer	CASE Category
Moses, L.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGT 05-020-228 **Stanford University** **1366**
Training of predoctoral graduate students in the field of
engineering design

Period	FY73:	Obligations	TOTAL:
04/21/67-08/01/72			\$330,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Pettit, J. M.	HQ-PY/Carter, C. H.	99-Multi-Discip	
(10-370 181-00-00)			

NGT 05-020-295 **Stanford University** **1367**
Training of predoctoral students in fields of lasers and optics

Period	FY73:	Obligations	TOTAL:
06/13/68-08/01/72			\$222,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Pettit, J. M.	HQ-PY/Carter, C. H.	99-Multi-Discip	
(10-370 181-00-00)			

NGT 05-020-361 **Stanford University** **1368**
Training of predoctoral students in field of aeronautics

Period	FY73:	Obligations	TOTAL:
04/11/69-08/01/73			\$216,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Pettit, J. M.	HQ-PY/Carter, C. H.	41-Aero Engr	
(10-370 181-00-00)			

NGT 05-020-409 **Stanford University** **1369**
Summer faculty fellowship program in engineering systems
design

Period	FY73:	Obligations	TOTAL:
12/18/69-03/31/74	\$121,607		\$465,811
Prin. Invest.	NASA Tech. Officer	CASE Category	
Adams, J. L.	HQ-PY/Carter, C. H.	49-Engr, NEC	
(10-371 340-00-00)			

NGT 05-020-412 **Stanford University** **1370**
A summer program of NASA summer faculty fellowships

Period	FY73:	Obligations	TOTAL:
12/16/69-03/31/74	\$127,906		\$546,304
Prin. Invest.	NASA Tech. Officer	CASE Category	
Bershadar, D.	HQ-PY/Carter, C. H.	49-Engr, NEC	
(10-371 340-00-00)			

NSR 05-020-500 **Stanford University** **1371**
Mathematical theory of computation

Period	FY73:	Obligations	TOTAL:
12/18/70-02/01/73	\$33,418		\$66,918
Prin. Invest.	NASA Tech. Officer	CASE Category	
McCarthy, J.	ARC/Rosenfeld, S. A.	21-Mathematics	
(10-750 115-04-60) (21-750 115-04-60)			

NAS 2-6485 **University of California - Berkeley** **1372**
Analysis of three-component aeromagnetic data

Period	FY73:	Obligations	TOTAL:
06/01/71-01/01/72			\$12,997
Prin. Invest.	NASA Tech. Officer	CASE Category	
Morrison, H. F.	ARC/Iufer, E. J.	42-Astro Engr	
Bhattacharyya, B. K. (21-680 160-75-90)			

NAS 2-6717 **University of California - Berkeley** **1373**
Study demand potential for STOL air transport

Period	FY73:	Obligations	TOTAL:
12/21/71-11/30/72			\$24,090
Prin. Invest.	NASA Tech. Officer	CASE Category	
Horonjeff, R.	ARC/Kenyon, G. C.	41-Aero Engr	
Kahafuni, A. (15-705 139-06-01)			

NAS 2-7159 **University of California - Berkeley** **1374**
Analysis of three component magnetic data

Period	FY73:	Obligations	TOTAL:
10/25/72-06/01/73	\$9,000		\$9,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Bhattacharyya, B. K.	ARC/Iufer, E. J.	32-Geological Sci	
ARC/Wilbur, A. C. (21-680 160-79-90)			

NAS 2-7562 **University of California - Berkeley** **1375**
Integrated Skylab study of earth resources in California

Period	FY73:	Obligations	TOTAL:
05/26/73-06/30/74	\$10,000		\$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Colwell, R. N.	ARC/Poppoff, I. G.	39-Env Sci, NEC	
Thorley, G. (21-960 948-63-83)			

NAS 2-7567 **University of California - Berkeley** **1376**
Agricultural interpreter technique development

Period	FY73:	Obligations	TOTAL:
05/24/73-06/30/74	\$75,000		\$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Colwell, R. N.	ARC/Poppoff, I. G.	39-Env Sci, NEC	
ARC/Tremor, J. W. (21-960 948-63-83)			

NAS 5-10362 **University of California - Berkeley** **1377**
Radiation measurement experiment for ATS-E

Period	FY73:	Obligations	TOTAL:
05/19/67-11/01/71			\$915,786
Prin. Invest.	NASA Tech. Officer	CASE Category	
Mozer, F. S.	GSFC/Wales, R.	45-Elec Engr	
(51-620 630-00-00) (51-620 630-12-00)			

NAS 5-11038 **University of California - Berkeley** **1378**
IMP-I solar particles experiment

Period	FY73:	Obligations	TOTAL:
06/30/67-01/31/74	\$49,000		\$659,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Anderson, R. A.	GSFC/Madden, J. J.	13-Physics	
(51-850 861-52-00)			

NAS 5-21827 **University of California - Berkeley** **1379**
ERTS-A data user investigations of California resources

Period	FY73:	Obligations	TOTAL:
08/29/72-11/01/73	\$350,000		\$350,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Colwell, R. N.	GSFC/Crump, E. W.	32-Geological Sci	
(51-680 641-14-01) (51-680 641-14-07)			

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NAS 5-23030 University of California - Berkeley 1380
OSO-J experiment definition study

Period	Obligations	
10/22/71-01/01/72	FY73: TOTAL: \$28,757	
Prin. Invest.	NASA Tech. Officer	CASE Category
Heckman, H. H.	GSFC/Thole, J. M.	13-Physics
	GSFC/Douley, J. L.	

(51-850 821-32-00)

NAS 5-23031 University of California - Berkeley 1381
OSO-J experiment definition study

Period	Obligations	
10/20/71-02/01/72	FY73: TOTAL: \$38,229	
Prin. Invest.	NASA Tech. Officer	CASE Category
Boyer, C. S.	GSFC/Thole, J. M.	11-Astronomy
	GSFC/Douley, J. L.	

(51-850 821-32-00)

NAS 8-27408 University of California - Berkeley 1382
HEAO-MISSION B experiment feasibility study

Period	Obligations	
06/01/71-02/28/73	FY73: \$260,000 TOTAL: \$810,954	
Prin. Invest.	NASA Tech. Officer	CASE Category
Alvarez, L.	MSFC/Dabbs, J. R.	11-Astronomy

(62-850 832-12-00) (62-980 975-84-10)

NAS 8-29603 University of California - Berkeley 1383
Cosmic ray flight experiment

Period	Obligations	
03/13/73-03/01/75	FY73: \$99,738 TOTAL: \$99,738	
Prin. Invest.	NASA Tech. Officer	CASE Category
Price, P. B.	MSFC/Ondrak, B. T.	13-Physics

(62-960 948-80-82)

NAS 8-29704 University of California - Berkeley 1384
HEAO study (BCR-5)

Period	Obligations	
03/16/73-06/30/73	FY73: \$25,000 TOTAL: \$25,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Alvarez, L.	MSFC/Neuschaefer, R. W.	31-Atmos Sci
Smith, L.	MSFC/Jones, J. B.	
Buffington, A.		

(62-850 832-12-00)

NAS 9-7801 University of California - Berkeley 1385
High Altitude Particle Physics experiment (HAPPE) program

Period	Obligations	
03/18/68-06/30/74	FY73: TOTAL: \$4,737,446	
Prin. Invest.	NASA Tech. Officer	CASE Category
Alvarez, L. W.	JSC/Craddock, W.	31-Atmos Sci

(72-980 975-84-00) (72-980 975-84-46) (72-980 945-84-00)

NAS 9-7889 University of California - Berkeley 1386
Lunar sample analysis

Period	Obligations	
07/16/68-01/01/72	FY73: TOTAL: \$1,560,600	
Prin. Invest.	NASA Tech. Officer	CASE Category
Calvin, M.	JSC/Harris, J. W.	12-Chemistry

(72-910 914-40-00)

NAS 9-8806 University of California - Berkeley 1387
Search for magnetic monopoles in moon surface materials

Period	Obligations	
01/28/69-12/01/71	FY73: TOTAL: \$521,528	
Prin. Invest.	NASA Tech. Officer	CASE Category
Alvarez, L. W.	JSC/Harris, J. W.	32-Geological Sci

(72-910 914-40-00)

NAS 9-10509 University of California - Berkeley 1388
Principal investigator support for particle shadow and boundary layer experiment

Period	Obligations	
04/14/70-03/31/74	FY73: \$116,249 TOTAL: \$450,264	
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, K. A.	JSC/Lafferty, P.	39-Env Sci, NEC

(72-910 914-49-00)

NAS 9-10930 University of California - Berkeley 1389
Effects of dietary protein on metabolism

Period	Obligations	
06/16/70-10/01/71	FY73: TOTAL: \$49,158	
Prin. Invest.	NASA Tech. Officer	CASE Category
Calloway, D.	JSC/Rambaut, P.	59-Life Sci, NEC
Margen, S.	JSC/Smith, M.	

(72-960 948-60-00)

NAS 9-11024 University of California - Berkeley 1390
Development of technology for soft X-ray detection

Period	Obligations	
06/26/70-07/01/71	FY73: TOTAL: \$50,943	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bowyer, C. S.	JSC/Robbins, D. E.	11-Astronomy

(72-910 914-40-00) (72-910 914-50-00)

NAS 9-11266 University of California - Berkeley 1391
Principal investigator support for soil mechanics experiment

Period	Obligations	
08/05/70-12/31/73	FY73: \$90,000 TOTAL: \$275,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mitchell, J. K.	JSC/Miller, M.	19-Phys Sci, NEC

(72-910 914-40-00)

NAS 9-12005 University of California - Berkeley 1392
Lunar surface cosmic ray experiment

Period	Obligations	
06/28/71-04/01/72	FY73: \$35,634 TOTAL: \$85,634	
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/	32-Geological Sci

(72-910 914-40-00)

NGL 05-003-003 University of California - Berkeley 1393
Study of extraterrestrial life using reflection spectra as a basis

Period	Obligations	
08/01/60-10/31/75	FY73: \$180,000 TOTAL: \$3,038,081	
Prin. Invest.	NASA Tech. Officer	CASE Category
Calvin, M.	HQ-SL/Young, R. S.	32-Geological Sci

(10-840 192-55-62) (10-870 189-55-62)

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGL 05-003-012 University of California - Berkeley 1394
Interdisciplinary space oriented research in physical, biological & engineering sciences

Period	FY73:	Obligations
02/01/62-01/01/73		TOTAL: \$8,189,403
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, K. A.	HQ-PY/Quinn, H. B.	99-Multi-Discip
	HQ-PY/Redding, E. R.	
(10-370 183-00-00)	(10-850 188-00-00)	(10-860 849-00-00)

NGL 05-003-016 University of California - Berkeley 1395
Research program in control & information systems

Period	FY73:	Obligations
02/26/63-12/01/73		TOTAL: \$514,670
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Desoer, C. A.	ARC/	41-Aero Engr
Polak, E. A.	ARC/Stewart, E. C.	
Zadach, L. A.		
(10-750 125-00-00)	(21-750 125-19-01)	(21-750 125-00-00)

NGL 05-003-017 University of California - Berkeley 1396
Investigation of high energy solar flare radiation & trapped radiation, including balloon-borne & sounding rocket tests of prototype detectors

Period	FY73:	Obligations
04/08/63-01/31/76		TOTAL: \$1,417,942
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, K. A.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 188-36-55)	(10-850 385-36-00)	(10-850 188-00-00)

NGL 05-003-024 University of California - Berkeley 1397
Primate hemodynamics and metabolism under conditions of weightlessness

Period	FY73:	Obligations
08/01/63-08/31/74		TOTAL: \$2,587,018
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pace, N.	ARC/Newsom, B. D.	51-Biology
(21-970 970-21-61)	(21-970 970-24-03)	(21-980 975-82-41)

NGL 05-003-079 University of California - Berkeley 1398
An investigation of enzyme assay techniques for life detection in extraterrestrial soil

Period	FY73:	Obligations
06/23/64-06/01/73		TOTAL: \$331,895
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McLaron, A. D.	HQ-SL/Young, R. S.	51-Biology
(10-870 189-00-00)	(10-870 189-55-63)	

NGL 05-003-220 University of California - Berkeley 1399
Plasma kinetic theory

Period	FY73:	Obligations
01/11/67-01/01/72		TOTAL: \$95,633
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kaufman, A. N.	GSFC/Northrop, T. G.	13-Physics
(51-850 188-00-00)	(51-850 188-36-53)	

NGL 05-003-230 University of California - Berkeley 1400
Structure of solar magnetic and velocity fields

Period	FY73:	Obligations
10/10/67-09/01/73		TOTAL: \$128,732
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Silver, S.	HQ-SG/Oertel, G. K.	13-Physics
	HQ-SG/Bogges, N. W.	
(10-850 188-00-00)		

NGL 05-003-272 University of California - Berkeley 1401
Research on radiation physics

Period	FY73:	Obligations
03/01/68-02/28/76		TOTAL: \$491,651
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tounes, C. H.	HQ-SG/Roman, N. G.	19-Phys Sci, NEC
	GSFC/Plotkin, H. H.	
(10-740 129-00-00)	(10-850 188-00-00)	

NGL 05-003-286 University of California - Berkeley 1402
Orbiting spacecraft infrared spectrometer development for terrestrial and laboratory study of planetary atmospheres

Period	FY73:	Obligations
08/08/68-08/01/74		TOTAL: \$692,908
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pimental, G. C.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-83)		

NGL 05-003-404 University of California - Berkeley 1403
Integrated study of earth resources in the state of California using remote sensing techniques

Period	FY73:	Obligations
07/13/70-04/30/76		TOTAL: \$2,500,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Colewell, R. N.	ARC/Poppoff, I. G.	39-Env Sci, NEC
	HQ-ER/Jacobs, G. J.	
(10-371 340-00-00)	(10-680 160-75-80)	

NGL 05-003-409 University of California - Berkeley 1404
Lunar sample analysis

Period	FY73:	Obligations
01/26/71-01/31/76		TOTAL: \$265,750
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reynolds, J. H.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGL 05-003-410 University of California - Berkeley 1405
Lunar sample analysis

Period	FY73:	Obligations
02/22/71-01/31/76		TOTAL: \$386,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Price, P. B.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGL 05-003-497 University of California - Berkeley 1406
Research in space sciences

Period	FY73:	Obligations
04/05/72-03/01/75		TOTAL: \$400,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, K. A.	HQ-PY/Redding, E. R.	99-Multi-Discip
(10-371 340-00-00)		

NGR 05-003-020 University of California - Berkeley 1407
Study on the chemistry of living systems

Period	FY73:	Obligations
07/29/63-07/01/72		TOTAL: \$2,760,487
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jukes, T.	HQ-SL/Young, R. S.	51-Biology
(10-870 189-00-00)	(10-870 189-57-61)	

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGR 05-003-143 **University of California - Berkeley** **1408**
Optimization of design of space experiments from the standpoint of data processing

Period	Obligations	
01/27/70-06/16/72	FY73: TOTAL: \$129,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Algazi, V. R.	GSFC/Lynch, T. J.	45-Elec Engr
Sakrisson, D. J.	GSFC/Miller, J. E.	
(25-750 125-00-00)	(51-620 164-06-53)	(51-750 125-00-00)

NGR 05-003-239 **University of California - Berkeley** **1409**
Auroral zone rocket studies of electric fields and precipitating particles

Period	Obligations	
08/26/68-08/01/74	FY73: \$120,000 TOTAL: \$515,811	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, K. A.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Ott, E. J.	
(10-850 879-11-00)		

NGR 05-003-302 **University of California - Berkeley** **1410**
Martian surface weathering studies

Period	Obligations	
11/25/68-06/30/73	FY73: TOTAL: \$151,928	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Calvin, M.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	
(10-840 185-50-81)	(10-840 185-00-00)	

NGR 05-003-309 **University of California - Berkeley** **1411**
Non-gravitational forces of periodic comets

Period	Obligations	
10/20/70-04/30/73	FY73: TOTAL: \$20,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cunningham, L. E.	HQ-SG/Dubin, M.	31-Atmos Sci
(10-850 188-45-01)		

NGR 05-003-376 **University of California - Berkeley** **1412**
High resolution studies of cosmic rays and solar particles

Period	Obligations	
04/16/71-01/31/74	FY73: \$75,000 TOTAL: \$168,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Price, P. B.	HQ-SG/Opp, A. G.	11-Astronomy
	HQ-SG/Kavanagh, L. D., Jr.	
(10-850 879-11-00)	(10-850 188-46-51)	

NGR 05-003-402 **University of California - Berkeley** **1413**
High angular resolution and position determinations by infrared interferometry

Period	Obligations	
04/27/70-10/31/73	FY73: TOTAL: \$69,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Townes, C. H.	HQ-SG/Boggess, N. W.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-41-55)	(10-680 160-00-00)	(10-850 188-00-00)

NGR 05-003-406 **University of California - Berkeley** **1414**
Lunar soil properties and soil mechanics

Period	Obligations	
06/09/70-06/19/73	FY73: TOTAL: \$125,510	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mitchell, J. K.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Senich, D.	
(10-810 383-09-50)	(10-810 195-00-00)	(10-910 914-41-00)

NGR 05-003-418 **University of California - Berkeley** **1415**
Lunar sample analysis

Period	Obligations	
06/16/71-01/01/72	FY73: TOTAL: \$559,900	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Calvin, M.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 05-003-431 **University of California - Berkeley** **1416**
Data processing of Martian topographic information obtained from ground-based radar and spectroscopy and from Mariners 6 and 7

Period	Obligations	
02/19/71-01/01/73	FY73: TOTAL: \$30,109	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anderson, K. A.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Morris, E. C.	
(10-840 384-50-80)		

NGR 05-003-432 **University of California - Berkeley** **1417**
Airborne far infrared astronomy

Period	Obligations	
05/10/71-06/30/72	FY73: \$30,000 TOTAL: \$74,121	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Townes, C. H.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Mason, R. H.	
(21-850 352-02-01)	(10-850 352-02-01)	

NGR 05-003-435 **University of California - Berkeley** **1418**
Lunar sample analysis

Period	Obligations	
04/01/71-01/31/74	FY73: \$215,000 TOTAL: \$917,800	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burlingame, A. L.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 05-003-445 **University of California - Berkeley** **1419**
Experiment for the Swedish auroral payload

Period	Obligations	
04/06/71-03/31/73	FY73: \$14,220 TOTAL: \$43,521	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mozer, F. S.	HQ-SG/Dubin, M.	31-Atmos Sci
	HQ-SG/Kavanagh, L. D., Jr.	
(10-850 879-11-00)	(10-850 879-00-00)	

NGR 05-003-447 **University of California - Berkeley** **1420**
Electrical properties of dry rocks

Period	Obligations	
04/12/71-07/01/73	FY73: TOTAL: \$51,860	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morrison, H. F.	JSC/Strangway, D. W.	19-Phys Sci, NEC
(72-910 914-50-00)		

NGR 05-003-450 **University of California - Berkeley** **1421**
Study of X-ray emission from galactic and extragalactic sources with emphasis on soft and ultra-soft wavelengths

Period	Obligations	
05/28/71-05/31/74	FY73: \$143,737 TOTAL: \$410,549	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowyer, C. S.	HQ-SG/Boggess, N. W.	11-Astronomy
	HQ-SG/Ott, E. J.	
(10-850 879-11-00)		

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGR 05-003-451 University of California - Berkeley 1422
Research in aeronautics & air transportation

Period	Obligations	
03/30/71-03/14/74	FY73: TOTAL: \$191,565	
Prin. Invest.	NASA Tech. Officer	CASE Category
Talbot, L.	ARC/Peterson, V. L.	41-Aero Engr
(21-760 126-13-10)		

NGR 05-003-452 University of California - Berkeley 1423
Infrared spectra of planetary atmospheres

Period	Obligations	
02/18/72-06/30/74	FY73: \$45,000 TOTAL: \$75,744	
Prin. Invest.	NASA Tech. Officer	CASE Category
Townes, C. H.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-41-80)		

NGR 05-003-453 University of California - Berkeley 1424
Theoretical X- and gamma ray astronomy

Period	Obligations	
08/30/71-07/31/73	FY73: \$29,972 TOTAL: \$55,401	
Prin. Invest.	NASA Tech. Officer	CASE Category
Silk, J. I.	HQ-SG/Kelsall, T.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-41-59)		

NGR 05-003-458 University of California - Berkeley 1425
Definition phase of the Grand Tour missions planetary X-ray investigation for outer planet missions

Period	Obligations	
04/09/71-06/30/72	FY73: TOTAL: \$42,198	
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, K. A.	HQ-SL/Mitz, M. A.	13-Physics
	HQ-SL/Keller, J. W.	
(10-840 186-68-68) (10-840 186-68-52)		

NGR 05-003-459 University of California - Berkeley 1426
Study of the atmospheric conditions affecting infrared astronomical measurements at White mountain California

Period	Obligations	
04/23/71-03/31/73	FY73: TOTAL: \$27,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Field, G. B.	HQ-SL/Brunk, W. E.	11-Astronomy
(10-840 196-41-80)		

NGR 05-003-460 University of California - Berkeley 1427
The chemistry of living systems

Period	Obligations	
07/21/71-07/31/73	FY73: \$75,000 TOTAL: \$175,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Jukes, T. H.	HQ-SL/Young, R. S.	12-Chemistry
(10-840 192-55-61)		

NGR 05-003-462 University of California - Berkeley 1428
Formation of alkaline oxides in electric discharge

Period	Obligations	
05/06/71-05/06/74	FY73: \$16,553 TOTAL: \$50,473	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bell, A. T.	ARC/Wydeven, T. J.	43-Chem Engr
(21-970 970-22-30) (21-970 970-22-20) (21-770 127-53-40)		

NGR 05-003-470 University of California - Berkeley 1429
In vivo measurement of human body measurements

Period	Obligations	
05/11/72-12/31/73	FY73: \$66,508 TOTAL: \$106,508	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pace, N.	ARC/Newsom, B. D.	59-Life Sci, NEC
(21-970 970-21-14)		

NGR 05-003-471 University of California - Berkeley 1430
Sociopolitical assessment of advanced technology

Period	Obligations	
05/21/71-10/31/73	FY73: \$50,000 TOTAL: \$126,332	
Prin. Invest.	NASA Tech. Officer	CASE Category
Laporte, T. R.	ARC/Tanner, T. A., Jr.	75-Political Sci
	ARC/Nagel, D. C.	
(21-704 501-29-01)		

NGR 05-003-478 University of California - Berkeley 1431
Competitive reactivity and poisoning of noble metal catalysts

Period	Obligations	
10/08/71-01/14/74	FY73: \$24,982 TOTAL: \$51,237	
Prin. Invest.	NASA Tech. Officer	CASE Category
Merrill, R. P.	ARC/Wydeven, T. J.	12-Chemistry
(21-970 970-22-21) (21-970 970-22-20)		

NGR 05-003-480 University of California - Berkeley 1432
Continued reduction and analysis of data obtained by the 3dme experiment on ATS-5

Period	Obligations	
04/01/72-12/31/73	FY73: \$40,000 TOTAL: \$80,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mozer, F. S.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Hallenbeck, D. R.	
(10-850 385-36-00)		

NGR 05-003-486 University of California - Berkeley 1433
Lunar sample analysis

Period	Obligations	
12/20/71-09/30/73	FY73: TOTAL: \$41,400	
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/Ghose, S.	13-Physics
(72-910 914-40-00)		

NGR 05-003-499 University of California - Berkeley 1434
Analysis and photometry of spectra of TiO and ZrO for application to study sunspots

Period	Obligations	
03/12/73-05/31/73	FY73: \$17,624 TOTAL: \$17,624	
Prin. Invest.	NASA Tech. Officer	CASE Category
Phillips, J. G.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-53)		

NGR 05-003-510 University of California - Berkeley 1435
OGO-5 solar X-ray measurements and related solar flare emissions

Period	Obligations	
11/17/72-10/01/73	FY73: \$25,000 TOTAL: \$25,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, K. A.	HQ-SG/Oertel, G. K.	11-Astronomy
	HQ-SG/Weldon, J. M.	
(10-850 385-38-00)		

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGR 05-003-511 University of California - Berkeley 1436
Spectrographic observation of infrared lines

Period	Obligations	
03/01/73-02/28/74	FY73: \$70,000	TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Townes, C. H.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M., Jr.	

(21-850 352-02-03)

NGR 05-003-512 University of California - Berkeley 1437
Lunar sample analysis

Period	Obligations	
02/01/73-01/31/74	FY73: \$18,750	TOTAL: \$18,750
Prin. Invest.	NASA Tech. Officer	CASE Category
Morrison, H. F.	JSC/Harris, J. W.	13-Physics

(72-910 914-40-00)

NGR 05-003-538 University of California - Berkeley 1438
Source encoding of images for efficient transmission

Period	Obligations	
12/18/72-04/17/73	FY73: \$7,000	TOTAL: \$7,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Algazi, V. R.	GSFC/Lynch, T. J.	45-Elec Engr
Sakrison, D. J.		

(51-620 164-06-58)

NGR 05-003-553 University of California - Berkeley 1439
High energy primary cosmic radiation measured by superconducting magnetic spectrometer

Period	Obligations	
05/10/73-12/31/73	FY73: \$300,000	TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Alvarez, L. W.	HQ-SG/Opp, A. G.	11-Astronomy
	HQ-SG/Kavanagh, L. D., Jr.	

(10-850 188-46-52)

NGR 05-003-559 University of California - Berkeley 1440
Metal barrier - metal optical diodes

Period	Obligations	
03/19/73-03/31/74	FY73: \$34,524	TOTAL: \$34,524
Prin. Invest.	NASA Tech. Officer	CASE Category
Gustafson, T. K.	ARC/Billman, K. W.	13-Physics
	ARC/Hansen, C. F.	

(21-704 502-11-11)

NGR 05-007-305 University of California - Berkeley 1441
Correlative studies of solar wind, interplanetary magnetic field, and their effects on the geomagnetic cavity using Explorer 33 and 35 data

Period	Obligations	
01/08/71-06/30/72	FY73: \$22,925	TOTAL: \$22,925
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, P. J., Jr.	HQ-SG/Hallenbeck, D.	13-Physics
	HQ-SG/Schmerling, E. R.	

(10-850 385-50-00)

NGT 05-003-023 University of California - Berkeley 1442
Predoctoral training of graduate students in space related sciences & technology

Period	Obligations	
03/31/64-08/01/72	FY73: \$1,024,864	TOTAL: \$1,024,864
Prin. Invest.	NASA Tech. Officer	CASE Category
Elberg, S. S.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NAS 2-5668 University of California - Davis 1443
Analysis of flow over helicopter airfoils

Period	Obligations	
10/15/69-10/01/71	FY73: \$36,000	TOTAL: \$36,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Draper, H. A.	ARC/Yaggy, P. F.	41-Aero Engr
(21-760 126-00-00)	(21-760 126-9X-00)	(21-760 136-9X-00)

NAS 2-5826 University of California - Davis 1444
Determinations of plasma glucose from horse urine

Period	Obligations	
03/13/70-09/01/71	FY73: \$16,160	TOTAL: \$16,160
Prin. Invest.	NASA Tech. Officer	CASE Category
Evans, J. S.	ARC/Winget, C. M.	51-Biology
(21-870 189-52-61)	(21-870 189-00-00)	

NAS 2-6633 University of California - Davis 1445
Study influence of gravity on the metabolism of various amino acids in higher plants

Period	Obligations	
10/01/72-09/30/73	FY73: \$18,483	TOTAL: \$34,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Mazelis, M.	ARC/Taketa, S. T.	39-Env Sci, NEC
(21-970 970-21-61)		

NAS 2-6657 University of California - Davis 1446
Life sciences literature analysis evaluation & data summation

Period	Obligations	
10/05/71-09/30/72	FY73: \$61,750	TOTAL: \$61,750
Prin. Invest.	NASA Tech. Officer	CASE Category
Beljan, J. R.	ARC/Winget, C. M.	59-Life Sci, NEC
(21-770 137-09-01)		

NAS 2-6763 University of California - Davis 1447
Bone density reports

Period	Obligations	
01/20/72-07/20/72	FY73: \$9,364	TOTAL: \$9,364
Prin. Invest.	NASA Tech. Officer	CASE Category
Goldman, M.	ARC/Oyama, J.	53-Other Medical
(21-970 970-21-61)		

NAS 2-7152 University of California - Davis 1448
Social interaction study

Period	Obligations	
08/24/72-12/31/73	FY73: \$107,479	TOTAL: \$107,479
Prin. Invest.	NASA Tech. Officer	CASE Category
Beljan, J. R.	ARC/Winget, C. M.	53-Other Medical
	ARC/Vernikos-Danell, J.	
(21-840 384-47-01)	(21-970 970-21-52)	(21-970 970-21-53)

NAS 2-7342 University of California - Davis 1449
Determination of insulin & growth hormone

Period	Obligations	
02/01/73-06/30/73	FY73: \$10,000	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Sheikholislam, B.	ARC/Dolkas, C.	52-Clinical Med
Sheikholislam, B.	ARC/Danellis, J. V.	
(21-970 970-21-14)		

**NASA'S UNIVERSITY PROGRAM
CALIFORNIA (Continued)**

NAS 2-7503 University of California - Davis 1450
Plasma-heart-temperature determinations

Period	Obligations	
04/03/73-04/03/74	FY73: \$9,900	TOTAL: \$9,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Evans, J. W.	ARC/Winget, C. W.	59-Life Sci, NEC
	ARC/Danellis, J. V.	

(21-970 970-21-52)

NAS 2-7516 University of California - Davis 1451
Water sampling & analysis

Period	Obligations	
05/01/73-04/30/74	FY73: \$4,000	TOTAL: \$4,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Goldman, C. R.	ARC/Wrigley, R. C.	31-Atmos Sci

(21-680 160-75-22)

NAS 2-7519 University of California - Davis 1452
Biotelemetry from instrumented simians

Period	Obligations	
04/10/73-04/10/74	FY73: \$13,000	TOTAL: \$13,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Chapman, L. F.	ARC/Winget, C. M.	53-Other Medical
	ARC/Danellis, J. V.	

(21-970 970-21-52)

NAS 9-13504 University of California - Davis 1453
Endocrinological and nutritional consequences of group interactions

Period	Obligations	
06/28/73-08/31/74	FY73: \$15,977	TOTAL: \$15,977
Prin. Invest.	NASA Tech. Officer	CASE Category
Beljan, J. R.	JSC/Leach, C. S.	52-Clinical Med

(72-970 970-51-16)

NGL 05-004-002 University of California - Davis 1454
Investigation of genetic characteristics of microbial growth at low temperatures

Period	Obligations	
07/15/64-06/01/72	FY73:	TOTAL: \$82,695
Prin. Invest.	NASA Tech. Officer	CASE Category
Ingraham, J. L.	HQ-MM/	51-Biology

(10-870 189-00-00)

NGL 05-004-008 University of California - Davis 1455
Physiological effects of chronic acceleration

Period	Obligations	
03/01/65-02/01/75	FY73: \$47,500	TOTAL: \$693,689
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, A. H.	ARC/Oyama, J.	51-Biology

(21-970 970-21-61) (10-870 189-00-00) (21-870 189-54-61)

NGL 05-004-031 University of California - Davis 1456
A systems analysis study of the properties of veins

Period	Obligations	
04/01/67-07/31/73	FY73:	TOTAL: \$183,539
Prin. Invest.	NASA Tech. Officer	CASE Category
Carlson, L. D.	ARC/Sandler, H.	53-Other Medical

(21-770 127-00-00) (10-770 127-00-00) (21-770 127-49-40)

NGR 05-004-006 University of California - Davis 1457
Self-consistent study of trapped radiation in the geomagnetic field

Period	Obligations	
02/01/66-02/01/77	FY73:	TOTAL: \$19,177
Prin. Invest.	NASA Tech. Officer	CASE Category
Hurley, J. P.	HQ-SG/	32-Geological Sci

(51-850 188-00-00)

NGR 05-004-026 University of California - Davis 1458
Peripheral volume measurements

Period	Obligations	
11/04/66-03/01/73	FY73:	TOTAL: \$152,930
Prin. Invest.	NASA Tech. Officer	CASE Category
Carlson, L. D.	JSC/Jackson, M. M.	53-Other Medical
	JSC/Hoffler, G. W.	

(72-770 127-00-00) (72-980 945-60-00) (10-860 949-00-00)

NGR 05-004-035 University of California - Davis 1459
The role of brown fat in the thermogenesis of animals and man

Period	Obligations	
10/27/67-10/31/72	FY73: \$15,000	TOTAL: \$219,458
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, R. E.	WS/Holton, E. M.	51-Biology
	WS/Jackson, E. B.	

(53-970 970-71-61)

NGR 05-004-051 University of California - Davis 1460
Control power requirements of VTOL aircraft

Period	Obligations	
03/31/69-09/30/73	FY73:	TOTAL: \$55,540
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffman, M. S.	ARC/Corliss, L.	46-Mech Engr

(21-750 125-19-32) (25-750 125-00-00) (21-750 125-00-00)

NGR 05-004-074 University of California - Davis 1461
High pressure Hugoniot measurements on lunar rocks collected on Apollo missions

Period	Obligations	
06/12/70-03/31/74	FY73:	TOTAL: \$21,272
Prin. Invest.	NASA Tech. Officer	CASE Category
Borg, R. J.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	

(10-810 195-42-65) (10-810 195-00-00)

NGR 05-004-076 University of California - Davis 1462
Lunar sample analysis

Period	Obligations	
01/28/71-09/30/72	FY73:	TOTAL: \$28,000
Prin. Invest.	NASA Tech. Officer	CASE Category
MacGregor, I. D.	JSC/Harris, J. W.	13-Physics

(72-910 914-40-00)

NGR 05-004-080 University of California - Davis 1463
Medical applications of space related research

Period	Obligations	
02/12/71-04/30/73	FY73: \$17,750	TOTAL: \$55,615
Prin. Invest.	NASA Tech. Officer	CASE Category
Beljan, J. R.	ARC/Young, D. R.	53-Other Medical

(21-970 970-24-01) (21-970 970-21-17) (21-770 127-49-40)

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGR 05-041-012 **University of California - Irvine** **1464**
Diagnosis of preclinical viral illness and prophylaxis against viral disease

Period	Obligations	
07/13/71-02/28/74	FY73: \$34,996	TOTAL: \$60,696
Prin. Invest.	NASA Tech. Officer	CASE Category
Tilles, J. G.	ARC/Mandel, A. D.	52-Clinical Med
(21-970 970-21-25)		

NAS 1-10107 **University of California - Los Angeles** **1465**
Development of an experiment for visible radiation polarization measurements from a satellite

Period	Obligations	
06/29/70-03/31/73	FY73: \$750	TOTAL: \$253,057
Prin. Invest.	NASA Tech. Officer	CASE Category
Sekera, Z.	LARC/Kopia, L. P.	31-Atmos Sci
Rao, C. R.	LARC/Beatty, M. E.	
(23-620 630-52-00)	(23-620 630-00-00)	

NAS 2-6649 **University of California - Los Angeles** **1466**
Study interactivity of hypogravity

Period	Obligations	
10/05/71-10/04/72	FY73:	TOTAL: \$34,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ebersold, W. T.	ARC/Tremor, J. W.	51-Biology
(21-980 975-82-41)		

NAS 2-6791 **University of California - Los Angeles** **1467**
Lunar magnetometer network support

Period	Obligations	
01/14/72-12/31/73	FY73: \$5,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Schubert, G.	ARC/Dyal, P.	13-Physics
(21-910 914-40-00)		

NAS 2-7251 **University of California - Los Angeles** **1468**
Pioneer F/G data analysis

Period	Obligations	
10/13/72-06/01/73	FY73: \$45,000	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, P. J.	ARC/Hall, C. F.	13-Physics
(21-840 811-22-00)		

NAS 2-7440 **University of California - Los Angeles** **1469**
Stable isotope ratio measurements

Period	Obligations	
02/28/73-09/30/73	FY73: \$11,400	TOTAL: \$11,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaplan, I. R.	ARC/Chang, S.	12-Chemistry
	ARC/Kvenvolden, K. A.	
(21-840 192-55-62)		

NAS 5-9097 **University of California - Los Angeles** **1470**
Trapped particles experiment for the OGO program, OGO-E mission

Period	Obligations	
01/27/65-12/31/72	FY73:	TOTAL: \$826,920
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, P. J.	GSFC/Meese, K. J.	13-Physics
Farley, T. A.		
(51-850 841-00-00)	(51-850 385-50-00)	(51-850 841-12-00)

NAS 5-9098 **University of California - Los Angeles** **1471**
Tri-axial fluxgate magnetometer experiment for the Orbiting Geophysical Observatories program, OGO-E mission

Period	Obligations	
01/27/65-12/31/72	FY73:	TOTAL: \$886,780
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, P. J.	GSFC/Meese, K. J.	13-Physics
(51-850 841-00-00)	(51-850 841-12-00)	(51-850 385-50-00)

NAS 5-10167 **University of California - Los Angeles** **1472**
Critical problem study in space communications system

Period	Obligations	
04/25/66-04/01/77	FY73:	TOTAL: \$67,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Balakrishnan, A. V.	GSFC/Kutz, R.	45-Elec Engr
(51-620 164-00-00)	(51-680 160-00-00)	

NAS 5-11674 **University of California - Los Angeles** **1473**
Magnetometer experiment for the ATS-F

Period	Obligations	
04/29/69-04/30/76	FY73: \$50,000	TOTAL: \$407,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Coleman, P. J.	GSFC/Wales, R. O.	32-Geological Sci
(51-620 630-22-00)		

NAS 8-26402 **University of California - Los Angeles** **1474**
Directional solidification of eutectic composites in space environment

Period	Obligations	
10/08/70-04/01/72	FY73:	TOTAL: \$24,273
Prin. Invest.	NASA Tech. Officer	CASE Category
Yuc, A. S.	MSFC/McPherson, W.	43-Chem Engr
(62-980 975-79-00)		

NAS 8-28310 **University of California - Los Angeles** **1475**
Metal and halide eutectics, Skylab experiment

Period	Obligations	
11/02/72-04/30/74	FY73: \$34,967	TOTAL: \$34,967
Prin. Invest.	NASA Tech. Officer	CASE Category
Yue, A. S.	MSFC/Adams, W. R.	19-Phys Sci, NEC
	MSFC/Aldrich, B. R.	
(62-960 948-90-95)		

NAS 8-28358 **University of California - Los Angeles** **1476**
Study of control systems for advanced space vehicles

Period	Obligations	
02/15/72-02/14/74	FY73: \$17,000	TOTAL: \$38,871
Prin. Invest.	NASA Tech. Officer	CASE Category
Likins, P. W.	MSFC/Seltzer, S. M.	49-Engr, NEC
	MSFC/Glaese, J. R.	
(62-980 908-54-08)		

NAS 9-10835 **University of California - Los Angeles** **1477**
Effects of selected drugs on sleep and performance

Period	Obligations	
06/09/70-07/01/71	FY73:	TOTAL: \$43,818
Prin. Invest.	NASA Tech. Officer	CASE Category
Kales, A.	JSC/Delucchi, M. R.	52-Clinical Med
	JSC/Beckman, E. L.	
(72-910 914-50-00)		

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NAS 9-11907 University of California - Los Angeles 1478
Research on utricular influences on visual-motor control

Period	Obligations
06/28/71-09/30/73	FY73: TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Markham, C. H.	JSC/Homick, J. L. 59-Life Sci, NEC
(72-910 914-50-00)	(72-970 970-51-11)

NAS 9-12236 University of California - Los Angeles 1479
Apollo lunar orbit subsatellite magnetometer experiment

Period	Obligations
10/19/71-03/30/74	FY73: \$170,000 TOTAL: \$345,000
Prin. Invest.	NASA Tech. Officer CASE Category
Coleman, P. J., Jr.	JSC/Lafferty, P. E. 11-Astronomy
(72-910 914-49-00)	

NAS 9-12757 University of California - Los Angeles 1480
Lunar photo and altimetry analysis

Period	Obligations
05/08/72-07/01/75	FY73: TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer CASE Category
Kaula, W. M.	JSC/Hardee, S. N. 13-Physics
(72-910 914-49-00)	

NGL 05-007-002 University of California - Los Angeles 1481
Theoretical evaluation of the internal structures and atmospheres of planets and the moon

Period	Obligations
01/01/62-12/01/74	FY73: \$27,000 TOTAL: \$473,415
Prin. Invest.	NASA Tech. Officer CASE Category
Kaula, W. M.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Allenby, R. J.
(10-810 383-09-56)	(10-910 914-00-00) (10-810 195-00-00)

NGL 05-007-003 University of California - Los Angeles 1482
Interdisciplinary space oriented research in physical, biological and engineering sciences

Period	Obligations
03/01/62-03/31/74	FY73: TOTAL: \$4,840,654
Prin. Invest.	NASA Tech. Officer CASE Category
Libby, W. F.	HQ-PY/Redding, E. R. 99-Multi-Discip
(10-370 183-00-00)	(10-870 189-00-00) (10-860 849-00-00)

NGL 05-007-004 University of California - Los Angeles 1483
Theoretical & experimental investigations of particles & fields in space, including construction of prototype instrumentation

Period	Obligations
03/01/62-09/29/75	FY73: \$180,000 TOTAL: \$1,875,554
Prin. Invest.	NASA Tech. Officer CASE Category
Coleman, P. J.	HQ-SG/Kavanagh, L. D. 13-Physics
	HQ-SG/Schmerling, E. R.
(10-850 188-36-55)	(10-850 385-36-00) (10-850 188-00-00)

NGL 05-007-005 University of California - Los Angeles 1484
Isotopic chemistry of meteorites, including studies of variation in isotopic abundances among discrete specimens

Period	Obligations
09/20/62-08/31/76	FY73: \$62,000 TOTAL: \$312,620
Prin. Invest.	NASA Tech. Officer CASE Category
Wetherill, G. W.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Pomeroy, J. H.
(10-810 383-09-57)	(10-810 383-09-50)

NGL 05-007-006 University of California - Los Angeles 1485
Studies on the high pressure solid phases of inert gases, particularly as they might relate to planetary interiors

Period	Obligations
09/24/62-09/30/75	FY73: \$44,000 TOTAL: \$432,538
Prin. Invest.	NASA Tech. Officer CASE Category
Kennedy, G. C.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Allenby, R. J.
(10-810 195-42-65)	(10-840 185-00-00)

NGL 05-007-046 University of California - Los Angeles 1486
Solar elements, their physical parameters and abundances

Period	Obligations
10/06/65-04/01/73	FY73: TOTAL: \$373,081
Prin. Invest.	NASA Tech. Officer CASE Category
Alley, L. H.	HQ-SG/Oertel, G. K. 11-Astronomy
(10-850 188-00-00)	

NGL 05-007-066 University of California - Los Angeles 1487
Investigation of interaction between ion beams and plasmas

Period	Obligations
11/09/64-04/01/72	FY73: TOTAL: \$172,488
Prin. Invest.	NASA Tech. Officer CASE Category
Wong, A. Y.	GSFC/Northrop, T. G. 13-Physics
	GSFC/Mentzer, R. H.
(51-850 188-00-00)	

NGL 05-007-190 University of California - Los Angeles 1488
Theoretical space plasma physics

Period	Obligations
06/27/68-09/30/75	FY73: \$35,000 TOTAL: \$213,380
Prin. Invest.	NASA Tech. Officer CASE Category
Kennel, C. F.	HQ-SG/Kavanagh, L. D. 13-Physics
	HQ-SG/Schmerling, E. R.
(10-850 188-36-55)	(10-850 188-00-00) (10-850 188-36-51)

NGL 05-007-195 University of California - Los Angeles 1489
Phenomena underlying behavior of complex living systems in space

Period	Obligations
04/01/68-06/01/73	FY73: TOTAL: \$1,132,000
Prin. Invest.	NASA Tech. Officer CASE Category
French, J. D.	ARC/Winter, D. 51-Biology
(21-870 189-52-62)	(10-870 189-00-00) (10-870 189-52-62)

NGL 05-007-287 University of California - Los Angeles 1490
Lunar sample analysis

Period	Obligations
01/12/71-02/01/74	FY73: \$52,670 TOTAL: \$259,670
Prin. Invest.	NASA Tech. Officer CASE Category
Wetherill, G. W.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NGL 05-007-330 University of California - Los Angeles 1491
Lunar sample analysis

Period	Obligations
05/18/71-01/31/75	FY73: TOTAL: \$171,250
Prin. Invest.	NASA Tech. Officer CASE Category
Anderson, O. L.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGL 05-007-338 University of California - Los Angeles 1492
Study of new plastics and new metal alloys for possible use in total joint replacement

Period	Obligations	
11/30/71-11/01/73	FY73: TOTAL: \$20,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Amstutz, H. C.	LERC/Johnson, R. L.	47-Materials Engr
	LERC/Swikert, M. A.	

(22-740 114-03-24)

NGL 05-007-367 University of California - Los Angeles 1493
Lunar sample analysis

Period	Obligations	
06/30/72-01/31/76	FY73: \$64,400 TOTAL: \$140,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wasson, J. T.	JSC/Harris, J. W.	12-Chemistry

(72-910 914-40-00)

NGL 05-007-379 University of California - Los Angeles 1494
Flight dynamics analysis and system identification

Period	Obligations	
11/18/72-11/01/75	FY73: \$84,548 TOTAL: \$84,548	
Prin. Invest.	NASA Tech. Officer	CASE Category
Balakrishnan, A. V.	FRC/Rediess, H. A.	41-Aero Engr

(24-704 501-26-01)

NGR 05-007-091 University of California - Los Angeles 1495
Investigation of optimum meteorological satellite techniques by numerical simulation experiments

Period	Obligations	
11/09/64-09/30/73	FY73: \$59,765 TOTAL: \$590,100	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mintz, Y.	GSFC/Bandeen, W. R.	31-Atmos Sci
Arakawa, A.		
Webster, P. J.		

(51-620 610-11-00)

NGR 05-007-122 University of California - Los Angeles 1496
Time domain analysis of system identification problems

Period	Obligations	
01/09/67-11/30/72	FY73: \$48,044 TOTAL: \$247,858	
Prin. Invest.	NASA Tech. Officer	CASE Category
Balakrishnan, A. V.	FRC/Rediess, H. A.	41-Aero Engr

(24-760 136-62-02) (24-760 126-62-11) (24-750 125-00-00)

NGR 05-007-215 University of California - Los Angeles 1497
Support of group for the analysis of carbon compounds

Period	Obligations	
04/01/68-12/31/73	FY73: \$25,000 TOTAL: \$145,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Libby, W. F.	HQ-SL/Young, R. S.	32-Gelological Sci

(10-840 192-55-62) (10-870 189-00-00)

NGR 05-007-221 University of California - Los Angeles 1498
Nature and changes of organic matter in deep ocean cores

Period	Obligations	
08/08/69-12/31/73	FY73: \$54,009 TOTAL: \$168,009	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaplan, I. R.	HQ-SL/Young, R. S.	32-Gelological Sci

(10-840 192-55-62)

NGR 05-007-276 University of California - Los Angeles 1499
Data analysis on the OGO-3 and OGO-4 search coil magnetometers

Period	Obligations	
04/03/70-09/30/73	FY73: \$30,000 TOTAL: \$120,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Holzer, R. E.	HQ-SG/Kavanagh, L. D., Jr.	
	HQ-SG/Hallenbeck, D. R.	31-Atmos Sci

(10-850 385-36-00)

NGR 05-007-283 University of California - Los Angeles 1500
Analysis of laser ranging to the moon 14,66

Period	Obligations	
04/16/70-09/30/73	FY73: \$9,888 TOTAL: \$39,291	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaula, W. M.	HQ-SM/Strickland, A. T.	13-Physics

(10-810 383-09-56)

NGR 05-007-289 University of California - Los Angeles 1501
Lunar sample analysis

Period	Obligations	
12/29/70-01/31/74	FY73: \$58,980 TOTAL: \$170,880	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaplan, I. R.	JSC/Harris, J. W.	13-Physics

(72-910 914-40-00)

NGR 05-007-291 University of California - Los Angeles 1502
Lunar sample analysis

Period	Obligations	
12/29/70-01/31/73	FY73: TOTAL: \$131,700	
Prin. Invest.	NASA Tech. Officer	CASE Category
Wasson, J.	JSC/Harris, J. W.	13-Physics

(72-910 914-40-00)

NGR 05-007-292 University of California - Los Angeles 1503
Lunar sample analysis

Period	Obligations	
12/29/70-01/31/74	FY73: \$16,150 TOTAL: \$42,850	
Prin. Invest.	NASA Tech. Officer	CASE Category
Schopf, J. W.	JSC/Harris, J. W.	32-Gelological Sci

(72-910 914-40-00)

NGR 05-007-304 University of California - Los Angeles 1504
Program of solar wind data analysis utilizing data from Pioneer 6 and 7, Mariner 5 and Explorer satellites

Period	Obligations	
01/18/71-07/31/72	FY73: TOTAL: \$45,700	
Prin. Invest.	NASA Tech. Officer	CASE Category
Sisco, G. L.	HQ-SG/Hallenbeck, D.	13-Physics
	HQ-SG/Schmerling, E. R.	

(10-850 385-50-00)

NGR 05-007-317 University of California - Los Angeles 1505
Photogeologic interpretation of Mariner Mars 1969 imagery

Period	Obligations	
03/09/71-01/15/74	FY73: \$17,165 TOTAL: \$43,921	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lingenfelter, R. E.	HQ-SL/Dwornik, S. E.	32-Gelological Sci
Schubert, G.	HQ-SL/Allingham, J. W.	

(10-840 384-50-80)

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGR 05-007-323 University of California - Los Angeles 1506 Research in aeronautics & air transport

Period	FY73:	Obligations	TOTAL:
03/25/71-09/30/74			\$129,984
Prin. Invest.	NASA Tech. Officer	CASE Category	
Cole, J. D.	ARC/Peterson, V.	41-Aero Engr	
(21-760 126-13-10)			

NGR 05-007-326 University of California - Los Angeles 1507 Definition phase of the Grand Tour missions photo-polarimetry investigation for outer planets missions

Period	FY73:	Obligations	TOTAL:
04/06/71-06/01/72			\$1,441
Prin. Invest.	NASA Tech. Officer	CASE Category	
Wetherill, G. W.	HQ-SL/Mitz, M. A.	32-Gelological Sci	
	HQ-SL/Keller, J. W.		
(10-840 186-68-68)	(10-840 186-68-52)		

NGR 05-007-327 University of California - Los Angeles 1508 Definition phase of Grand Tour mission magnetic fields investigation for outer planets

Period	FY73:	Obligations	TOTAL:
04/05/71-10/31/72			\$46,362
Prin. Invest.	NASA Tech. Officer	CASE Category	
Coleman, P. J., Jr.	HQ-SL/Mitz, M. A.	13-Physics	
	HQ-SL/Keller, J. W.		
(10-840 186-68-68)	(10-840 186-68-52)		

NGR 05-007-328 University of California - Los Angeles 1509 Numerical modeling of the global atmosphere and the world oceans

Period	FY73:	Obligations	TOTAL:
08/15/71-11/14/73	\$100,309		\$200,309
Prin. Invest.	NASA Tech. Officer	CASE Category	
Mintz, Y.	GSFC/Halem, M.	31-Atmos Sci	
Arakawa, A.	Yanai, M.		
(51-680 160-44-52)	(51-680 408-02-02)	(51-680 160-20-51)	

NGR 05-007-329 University of California - Los Angeles 1510 Elemental variations in genetically related meteorites

Period	FY73:	Obligations	TOTAL:
04/27/71-04/30/75	\$66,925		\$118,222
Prin. Invest.	NASA Tech. Officer	CASE Category	
Stein, W. A.	HQ-SM/Bryson, R. P.	32-Gelological Sci	
	HQ-SM/Pomeroy, J. H.		
(10-810 383-09-57)	(10-810 383-09-50)	(10-810 195-42-67)	

NGR 05-007-337 University of California - Los Angeles 1511 Approximation concepts in structural synthesis

Period	FY73:	Obligations	TOTAL:
04/05/72-04/30/74	\$55,380		\$105,229
Prin. Invest.	NASA Tech. Officer	CASE Category	
Schmit, L. A.	LARC/Fulton, R. E.	41-Aero Engr	
(23-704 501-22-01)			

NGR 05-007-345 University of California - Los Angeles 1512 Lunar sample analysis

Period	FY73:	Obligations	TOTAL:
02/15/72-01/31/74			\$24,600
Prin. Invest.	NASA Tech. Officer	CASE Category	
Libby, W. F.	JSC/	32-Gelological Sci	
(72-910 914-40-00)			

NGR 05-007-351 University of California - Los Angeles 1513 Correlative studies of Apollo 15 and 16 subsatellite magnetometer data with the Explorer and lunar surface magnetometer data

Period	FY73:	Obligations	TOTAL:
05/25/72-11/30/73			\$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Coleman, P. J.	HQ-SM/Bryson, R. P.	32-Gelological Sci	
	HQ-SM/Allenby, R. J.		
(10-910 914-50-00)			

NGR 05-007-352 University of California - Los Angeles 1514 Oxidation-resistant alloys for high temperature structural use

Period	FY73:	Obligations	TOTAL:
01/12/72-04/01/73			\$25,531
Prin. Invest.	NASA Tech. Officer	CASE Category	
Douglass, D. L.	ARC/Gilbreath, W. P.	47-Materials Engr	
(21-740 114-03-30)	(21-740 114-03-37)		

NGR 05-007-359 University of California - Los Angeles 1515 Design of a fluxgate magnetometer

Period	FY73:	Obligations	TOTAL:
02/28/72-09/30/72			\$3,780
Prin. Invest.	NASA Tech. Officer	CASE Category	
Russell, C. T.	HQ-SL/Fellows, R. F.	31-Atmos Sci	
(10-840 186-68-63)			

NGR 05-007-395 University of California - Los Angeles 1516 Computational techniques for unsteady transflow

Period	FY73:	Obligations	TOTAL:
02/07/73-06/30/74	\$15,000		\$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Cole, J. D.	LARC/Bland, S. R.	41-Aero Engr	
	LARC/Bennett, R. M.		
(23-704 501-22-04)			

NGT 05-007-019 University of California - Los Angeles 1517 Training of graduate students in space-related science and technology

Period	FY73:	Obligations	TOTAL:
04/01/62-08/01/72			\$1,242,609
Prin. Invest.	NASA Tech. Officer	CASE Category	
Libby, W. F.	HQ-PY/Carter, C. H.	99-Multi-Discip	
(10-370 181-00-00)			

NAS 1-10373 University of California - Riverside 1518 Detection of minor atmospheric constituents by means of the solar infrared spectrum

Period	FY73:	Obligations	TOTAL:
10/23/70-09/30/72			\$34,980
Prin. Invest.	NASA Tech. Officer	CASE Category	
Behar, J. V.	LARC/Reichle, H. G.	31-Atmos Sci	
(23-680 160-00-00)			

NAS 5-21771 University of California - Riverside 1519 Evaluation of remote sensing in control of pink bollworm in cotton

Period	FY73:	Obligations	TOTAL:
06/29/72-10/31/73	\$33,139		\$34,639
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lewis, L. N.	GSFC/Crump, E. W.	39-Env Sci, NEC	
Reynolds, H. T.			
Pease, R. W.			
(51-680 641-14-01)	(51-680 641-14-05)		

**NASA'S UNIVERSITY PROGRAM
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NGL 05-008-005 University of California - Riverside 1520
Atomic scattering theory

Period	Obligations	
11/29/66-01/31/76	FY73: \$10,000	TOTAL: \$100,953
Prin. Invest.	NASA Tech. Officer	CASE Category
Poe, R. T.	GSFC/Temkin, A.	13-Physics
(51-850 188-48-52)	(51-850 188-00-00)	

NGR 05-008-022 University of California - Riverside 1521
Measurement of neutrons from sun

Period	Obligations	
05/16/69-06/30/73	FY73: \$40,000	TOTAL: \$190,000
Prin. Invest.	NASA Tech. Officer	CASE Category
White, R. S.	HQ-SG/Opp, A. G.	11-Astronomy
	HQ-SG/Kavanagh, L. D.	
(10-850 188-46-51)		

NGR 05-008-029 University of California - Riverside 1522
Airborne studies of photochemical air pollution in urban atmosphere

Period	Obligations	
03/23/71-09/30/75	FY73: \$53,914	TOTAL: \$107,764
Prin. Invest.	NASA Tech. Officer	CASE Category
Pitts, J. N.	ARC/Gloria, H. R.	39-Env Sci, NEC
	ARC/Reinisch, R. H.	
(21-680 160-75-79)	(21-702 770-18-03)	(21-740 134-03-22)

NAS 2-5602 University of California - San Diego 1523
Trapped radiation instrument

Period	Obligations	
07/15/69-07/31/73	FY73: \$69,292	TOTAL: \$1,049,292
Prin. Invest.	NASA Tech. Officer	CASE Category
Fillius, R. W.	ARC/Hall, C. F.	13-Physics
(21-840 811-22-00)		

NAS 2-6552 University of California - San Diego 1524
Data analysis of Jovian trapped radiation by Pioneer F/G

Period	Obligations	
01/25/72-06/30/72	FY73: \$38,370	TOTAL: \$124,870
Prin. Invest.	NASA Tech. Officer	CASE Category
Fillius, R. W.	ARC/Hall, C. F.	13-Physics
(21-840 811-22-00)		

NAS 2-6916 University of California - San Diego 1525
Computer time

Period	Obligations	
03/29/71-03/31/73	FY73: \$22,453	TOTAL: \$23,096
Prin. Invest.	NASA Tech. Officer	CASE Category
	ARC/Smith, M. C.	21-Mathematics
(21-760 366-00-00)	(21-790 797-00-00)	

NAS 5-10363 University of California - San Diego 1526
Experiment to study electric and magnetic fields with energetic electron detectors on ATS-E

Period	Obligations	
05/19/67-12/31/72	FY73: \$10,702	TOTAL: \$654,415
Prin. Invest.	NASA Tech. Officer	CASE Category
McIlwain, C. E.	GSFC/Wainscott, F. W.	1131-Atmos Sci
Fillius, R. W.		
(51-620 630-12-00)		

NAS 5-10364 University of California - San Diego 1527
Experiment to study auroral electrons and protons with low energy detectors on ATS-E

Period	Obligations	
05/10/67-08/31/72	FY73:	TOTAL: \$851,713
Prin. Invest.	NASA Tech. Officer	CASE Category
McIlwain, C. E.	GSFC/Wales, R.	31-Atmos Sci
Fillius, R. W.		
(51-620 630-00-00)	(51-620 630-12-00)	

NAS 5-11080 University of California - San Diego 1528
Cosmic X-ray experiment OSO-H

Period	Obligations	
09/13/67-09/28/73	FY73: \$100,000	TOTAL: \$1,846,768
Prin. Invest.	NASA Tech. Officer	CASE Category
Peterson, L. E.	GSFC/Thole, J. M.	11-Astronomy
	GSFC/Donley, J.	
(51-850 821-22-00)		

NAS 5-11081 University of California - San Diego 1529
Soft & hard solar X-ray experiment for OSO

Period	Obligations	
09/13/67-09/28/73	FY73: \$100,000	TOTAL: \$1,951,964
Prin. Invest.	NASA Tech. Officer	CASE Category
Peterson, L. E.	GSFC/Thole, J. M.	11-Astronomy
	GSFC/Donley, J.	
(51-850 821-22-00)		

NAS 5-21055 University of California - San Diego 1530
Programmable auroral particles experiment to be flown on the ATS-F

Period	Obligations	
06/27/69-04/30/76	FY73: \$150,000	TOTAL: \$985,000
Prin. Invest.	NASA Tech. Officer	CASE Category
McIlwain, C. E.	GSFC/Wales, R. O.	31-Atmos Sci
(51-620 630-22-00)	(51-620 630-00-00)	

NAS 8-26842 University of California - San Diego 1531
HEAO definition study experiment

Period	Obligations	
02/01/71-04/30/72	FY73:	TOTAL: \$455,251
Prin. Invest.	NASA Tech. Officer	CASE Category
Peterson, L. E.	MSFC/Power, J. A.	11-Astronomy
(62-850 832-12-00)	(62-850 188-78-53)	

NAS 8-27974 University of California - San Diego 1532
Design & development of AGR-4 MeV range gamma ray telescope experiment under the HEAO program

Period	Obligations	
06/22/72-02/01/78	FY73: \$1,036,463	TOTAL: \$2,727,439
Prin. Invest.	NASA Tech. Officer	CASE Category
Peterson, L. A.	MSFC/Jordan, W. E.	11-Astronomy
	MSFC/Jones, J. B.	
(62-850 832-12-00)		

NAS 8-28015 University of California - San Diego 1533
Solar flare infrared observations

Period	Obligations	
10/26/71-02/26/74	FY73:	TOTAL: \$90,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hudson, H. S.	MSFC/Fountain, W. F.	11-Astronomy
	MSFC/Wdowiak, T. J.	
(62-960 996-00-00)		

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NAS 9-10670 University of California - San Diego 1534 Scientific support for gamma ray spectrometer experiment

Period	Obligations
06/04/70-09/30/73	FY73: \$27,500 TOTAL: \$217,500
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	JSC/Lafferty, P. 39-Env Sci, NEC
(72-910 914-49-00)	

NGL 05-005-003 University of California - San Diego 1535 Laboratory and balloon experiments in X-ray and gamma ray astronomy

Period	Obligations
09/15/62-11/01/74	FY73: TOTAL: \$1,520,457
Prin. Invest.	NASA Tech. Officer CASE Category
Peterson, L. E.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Roman, N. G.
(10-850 188-00-00)	(10-850 188-46-53) (10-850 831-00-00)

NGL 05-005-004 University of California - San Diego 1536 Theoretical studies in astrophysics

Period	Obligations
02/04/63-03/31/76	FY73: \$50,000 TOTAL: \$557,133
Prin. Invest.	NASA Tech. Officer CASE Category
Burbidge, G. R.	HQ-SG/Roman, N. G. 11-Astronomy
	HQ-SG/Boggess, N. W.
(10-850 188-41-51)	(10-850 188-00-00)

NGL 05-005-007 University of California - San Diego 1537 Study of geomagnetically trapped particles by Explorer & Injun satellite data, refining particle detectors, detector systems & telemetered-data processing equipment

Period	Obligations
02/20/64-08/31/75	FY73: \$195,000 TOTAL: \$1,372,894
Prin. Invest.	NASA Tech. Officer CASE Category
McIlwain, C. E.	HQ-SG/Kavanagh, L. D. 13-Physics
	HQ-SG/Schmerling, E. R.
(10-850 188-36-55)	(10-850 385-36-00) (10-850 188-00-00)

NGL 05-009-002 University of California - San Diego 1538 Studies of the composition and structure of Explorer & Injun satellite data, refining particle

Period	Obligations
10/02/63-02/28/76	FY73: \$940 TOTAL: \$385,964
Prin. Invest.	NASA Tech. Officer CASE Category
Arrhenius, G.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Allenby, R. J.
(10-810 195-42-65)	(10-840 185-00-00)

NGL 05-009-004 University of California - San Diego 1539 Research on interaction of meteorites & cosmic rays & consideration of origin & history of meteorites

Period	Obligations
12/19/62-03/14/76	FY73: \$40,000 TOTAL: \$847,214
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Pomeroy, J. H.
(10-810 383-09-57)	(10-850 188-00-00) (10-860 848-00-00)

NGL 05-009-005 University of California - San Diego 1540 Research on general geochemical problems, including meteorite materials, rare gas content of meteorites & separation in gas phase at time of formation of solar system

Period	Obligations
10/31/62-02/28/76	FY73: \$30,000 TOTAL: \$410,707
Prin. Invest.	NASA Tech. Officer CASE Category
Suess, H. E.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Pomeroy, J. H.
(10-810 195-42-65)	(10-840 185-00-00)

NGL 05-009-025 University of California - San Diego 1541 Mass transfer in laminar hypersonic boundary layers

Period	Obligations
03/10/65-12/01/72	FY73: TOTAL: \$151,237
Prin. Invest.	NASA Tech. Officer CASE Category
Libby, P. A.	ARC/ 41-Aero Engr
(10-740 129-00-00)	

NGL 05-009-079 University of California - San Diego 1542 The application of signal detection theory to optics

Period	Obligations
06/05/68-09/01/72	FY73: TOTAL: \$134,000
Prin. Invest.	NASA Tech. Officer CASE Category
Helstom, C. W.	GSFC/Carrion, W. J. 13-Physics
(51-750 125-00-00)	(25-750 125-00-00)

NGL 05-009-103 University of California - San Diego 1543 Radiation measurement of radiological hazards in man and space

Period	Obligations
10/01/68-09/01/79	FY73: TOTAL: \$259,321
Prin. Invest.	NASA Tech. Officer CASE Category
Baily, N. A.	HQ-MM/Saunders, J. F. 51-Biology
	HQ-MM/Jones, W. L.
(23-770 127-00-00)	(10-770 127-49-21) (72-770 127-00-00)

NGL 05-009-109 University of California - San Diego 1544 In-flight evaluation of weightlessness and gravity on cardiopulmonary function of man

Period	Obligations
02/17/69-10/31/75	FY73: \$70,138 TOTAL: \$490,937
Prin. Invest.	NASA Tech. Officer CASE Category
West, J. B.	ARC/Billingham, J. 53-Other Medical
	ARC/Hoffmann, R.
(21-970 970-21-13)	

NGL 05-009-148 University of California - San Diego 1545 Lunar sample analysis

Period	Obligations
02/11/71-01/31/76	FY73: \$94,000 TOTAL: \$392,000
Prin. Invest.	NASA Tech. Officer CASE Category
Arnold, J. R.	JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)	

NGL 05-009-150 University of California - San Diego 1546 Lunar sample analysis

Period	Obligations
02/01/71-01/31/76	FY73: \$142,540 TOTAL: \$442,990
Prin. Invest.	NASA Tech. Officer CASE Category
Marti, K.	JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)	

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGL 05-009-154 **University of California - San Diego** **1547**
Lunar sample analysis

Period	Obligations	
01/06/71-01/31/75	FY73: \$36,830	TOTAL: \$246,330
Prin. Invest.	NASA Tech. Officer	CASE Category
Arrhenius, G. O.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 05-009-083 **University of California - San Diego** **1554**
Electrophysiological studies of the nervous system

Period	Obligations	
01/01/68-09/01/78	FY73:	TOTAL: \$113,059
Prin. Invest.	NASA Tech. Officer	CASE Category
Galambos, R.	ARC/Winter, D. L.	61-Biol Aspects
(10-870 189-00-00) (21-870 189-00-00)		

NGL 05-009-230 **University of California - San Diego** **1548**
Infrared astronomy research

Period	Obligations	
03/08/73-11/30/73	FY73: \$44,880	TOTAL: \$44,880
Prin. Invest.	NASA Tech. Officer	CASE Category
Gillet, F. C.	HQ-SG/Bogges, N. W.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-41-55)		

NGR 05-009-110 **University of California - San Diego** **1555**
The structure and evolution of the asteroid belt

Period	Obligations	
01/23/70-03/31/74	FY73: \$80,000	TOTAL: \$258,690
Prin. Invest.	NASA Tech. Officer	CASE Category
Alfven, H.	HQ-SG/Dubin, M.	11-Astronomy
	HQ-SL/Dwornik, S. E.	
(10-850 188-45-51) (10-840 185-50-81)		

NGR 05-005-005 **University of California - San Diego** **1549**
Study of lunar gamma ray emission

Period	Obligations	
09/10/63-10/31/73	FY73:	TOTAL: \$440,607
Prin. Invest.	NASA Tech. Officer	CASE Category
Arnold, J. R.	HQ-SM/Bryson, R. P.	32-Geological Sci
Peterson, L. E.	HQ-SM/Allenby, R. J.	
(10-840 185-00-00) (10-810 195-00-00) (10-860 849-00-00)		

NGR 05-009-142 **University of California - San Diego** **1556**
Infrared spectrometer investigations of the planets and satellite

Period	Obligations	
06/02/70-03/01/73	FY73:	TOTAL: \$95,824
Prin. Invest.	NASA Tech. Officer	CASE Category
Gillet, F. C.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-00-00, (10-840 196-41-02) (10-840 196-41-81)		

NGR 05-009-032 **University of California - San Diego** **1550**
Feasibility study on miniaturizing an automatic amino acid analyzer for use on Apollo and Mars voyager missions

Period	Obligations	
06/28/66-02/14/73	FY73:	TOTAL: \$515,346
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, S. L.	ARC/Harmount, T.	51-Biology
Castillo, F.		
(10-860 849-00-00) (10-980 945-43-00) (21-870 189-55-65)		

NGR 05-009-152 **University of California - San Diego** **1557**
Lunar sample analysis

Period	Obligations	
01/06/71-01/31/74	FY73: \$6,000	TOTAL: \$37,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Engel, A. E.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 05-009-075 **University of California - San Diego** **1551**
Velocity distributions and electron moment equations

Period	Obligations	
09/13/67-08/31/73	FY73: \$45,000	TOTAL: \$277,784
Prin. Invest.	NASA Tech. Officer	CASE Category
Helstrom, C. W.	HQ-SG/Schmerling, E. R.	13-Physics
	HQ-SG/Hallenbeck, D. R.	
(10-850 188-36-56)		

NGR 05-009-170 **University of California - San Diego** **1558**
Fission products of superheavy elements

Period	Obligations	
05/04/71-04/01/72	FY73:	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Marti, K.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Pomeroy, J. H.	
(10-810 195-42-67) (10-810 383-09-50)		

NGR 05-009-076 **University of California - San Diego** **1552**
Theory of wave propagation and wave-particle interaction in the earth magnetosphere

Period	Obligations	
10/19/67-09/30/73	FY73: \$45,000	TOTAL: \$253,656
Prin. Invest.	NASA Tech. Officer	CASE Category
Fejer, J. A.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Hallenbeck, D. R.	
(10-850 188-36-56)		

NGR 05-009-177 **University of California - San Diego** **1559**
Mission Definition phase for Grand Tour missions energetic particle investigation

Period	Obligations	
04/07/71-06/01/72	FY73:	TOTAL: \$5,850
Prin. Invest.	NASA Tech. Officer	CASE Category
Axford, W. I.	HQ-SL/Mitz, M. A.	13-Physics
	HQ-SL/Keller, J. W.	
(10-840 186-68-52) (10-840 186-68-68)		

NGR 05-009-081 **University of California - San Diego** **1553**
Theoretical studies of fields, particles and plasmas in space

Period	Obligations	
02/08/68-12/31/73	FY73: \$60,000	TOTAL: \$362,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Axford, W. I.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 188-36-55) (10-850 188-00-00) (10-850 188-36-53)		

NGR 05-009-178 **University of California - San Diego** **1560**
Measurement of fluctuations in turbulent boundary layers with heterogeneous composition

Period	Obligations	
04/13/72-08/31/73	FY73:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Libby, P. A.	LARC/	41-Aero Engr
	LARC/Bertram, M. H.	
(23-760 136-13-01)		

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGR 05-009-180 University of California - San Diego 1561
Behavior of thermal plasma in the ionosphere and magnetosphere

Period	Obligations
08/23/71-01/01/73	FY73: TOTAL: \$32,000
Prin. Invest.	NASA Tech. Officer CASE Category
Daryenik, J. R.	HQ-SG/Schmerling, E. R. 39-Env Sci, NEC
	HQ-SG/Kavanagh, L. D., Jr.

(10-850 188-36-55)

NGR 05-009-188 University of California - San Diego 1562
Construction of a 200 channel photometer for use in low light level astronomy

Period	Obligations
05/17/72-05/31/74	FY73: \$100,000 TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer CASE Category
McIlwain, C. E.	HQ-SG/Aucremanne, M. J. 11-Astronomy
Burbidge, E. M.	

(10-850 188-78-57)

NGR 05-009-190 University of California - San Diego 1563
Mass transfer in laminar hypersonic boundary layers

Period	Obligations
01/12/72-01/14/73	FY73: TOTAL: \$8,000
Prin. Invest.	NASA Tech. Officer CASE Category
Libby, P. A.	ARC/Nachtsheim, P. 41-Aero Engr

(21-742 117-07-04)

NGR 05-009-192 University of California - San Diego 1564
Study visual aspects of aircraft operation

Period	Obligations
03/06/72-01/31/74	FY73: \$50,300 TOTAL: \$107,300
Prin. Invest.	NASA Tech. Officer CASE Category
Harris, J. L.	ARC/Haines, R. F. 59-Life Sci, NEC
	ARC/Billingham, J.

(21-704 501-29-03)

NGR 05-009-197 University of California - San Diego 1565
Development of the combined pulsed neutron experiment probe

Period	Obligations
12/02/71-02/28/73	FY73: TOTAL: \$5,180
Prin. Invest.	NASA Tech. Officer CASE Category
Waggoner, J. A.	HQ-SM/Bryson, R. P. 12-Chemistry
Arnold, J. R.	HQ-MA/Allenby, R. J.

(10-810 195-42-66)

NGR 05-009-198 University of California - San Diego 1566
Mechanisms of alertness in man

Period	Obligations
05/24/72-06/30/74	FY73: \$45,000 TOTAL: \$90,000
Prin. Invest.	NASA Tech. Officer CASE Category
Galampos, R.	ARC/Anliker, J. E. 59-Life Sci, NEC

(21-970 970-21-53)

NGR 05-009-218 University of California - San Diego 1567
An automatic analyzer for amino acids purines and pyrimidines to examine lunar and Martian soil samples

Period	Obligations
09/12/72-08/01/73	FY73: \$40,000 TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer CASE Category
Miller, S. L.	HQ-SL/Young, R. S. 12-Chemistry

(10-840 192-55-61)

NGT 05-009-008 University of California - San Diego 1568
Training or predoctoral graduate students in space related sciences & technology

Period	Obligations
03/23/64-08/01/72	FY73: TOTAL: \$532,728
Prin. Invest.	NASA Tech. Officer CASE Category
York, H. F.	HQ-PY/Carter, C. H. 99-Multi-Discip

(10-370 181-00-00)

NAS 2-6632 University of California - San Francisco 1569
ACTH concentrations

Period	Obligations
10/21/71-04/21/72	FY73: TOTAL: \$4,999
Prin. Invest.	NASA Tech. Officer CASE Category
Dallman, M.	ARC/Danellis, J. V. 51-Biology

(21-770 137-09-01)

NAS 2-7326 University of California - San Francisco 1570
ACTH concentrations

Period	Obligations
12/18/72-06/30/73	FY73: \$5,000 TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer CASE Category
Dallman, M. F.	ARC/Danellis, J. V. 52-Clinical Med

(21-970 970-21-45)

NGL 05-025-014 University of California - San Francisco 1571
Structure and function of the purple membrane of halobacterium halobium

Period	Obligations
05/17/72-04/30/76	FY73: \$70,384 TOTAL: \$187,903
Prin. Invest.	NASA Tech. Officer CASE Category
Stolckenuecs, W.	ARC/Zill, L. P. 59-Life Sci, NEC
	HQ-SL/Young, R. S.

(10-970 970-14-01)

NGR 05-025-007 University of California - San Francisco 1572
The role of systemic and renal hemodynamics as determinants of sodium excretion and volume regulations

Period	Obligations
05/27/68-07/31/73	FY73: \$15,000 TOTAL: \$306,232
Prin. Invest.	NASA Tech. Officer CASE Category
Earley, L. E.	JSC/Jackson, M. M. 52-Clinical Med
	JSC/Hoffler, G. W.

(72-970 970-51-12) (72-770 127-00-00) (72-910 914-50-00)

NGR 05-025-008 University of California - San Francisco 1573
Microbial ecology of anterior nares of man

Period	Obligations
09/01/68-11/14/73	FY73: \$38,000 TOTAL: \$174,715
Prin. Invest.	NASA Tech. Officer CASE Category
Maibach, H. I.	ARC/Mandel, A. D. 52-Clinical Med

(21-970 970-21-25)

NGL 05-010-019 University of California - Santa Barbara 1574
Maar volcanoes and the role of water in their origin

Period	Obligations
06/22/67-03/01/73	FY73: \$6,494 TOTAL: \$113,915
Prin. Invest.	NASA Tech. Officer CASE Category
Fisher, R. V.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Allenby, R. J.

(10-810 195-42-64) (10-810 195-00-00) (10-840 185-00-00)

NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGL 05-010-020 University of California - Santa Barbara 1575
Librational dynamics of deformable satellites

Period	FY73:	Obligations	TOTAL:
12/14/67-01/01/73			\$60,202
Prin. Invest.	NASA Tech. Officer	CASE Category	
Mitchell, T. P.	GSFC/Lancaster, E. R.	46-Mech Engr	
(51-850 188-00-00)			

NGR 05-010-025 University of California - Santa Barbara 1576
Investigation of near critical vortex flows

Period	FY73:	Obligations	TOTAL:
10/31/68-09/01/72			\$48,665
Prin. Invest.	NASA Tech. Officer	CASE Category	
Bossel, H. H.	LARC/Gloss, B. B.	41-Aero Engr	
(23-760 126-00-00)	(23-760 136-13-01)		

NGR 05-010-035 University of California - Santa Barbara 1577
Pre-paleozoic biotas and environments

Period	FY73:	Obligations	TOTAL:
08/01/68-03/01/73	\$35,000		\$175,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Cloud, P. E.	HQ-SL/Young, R. S.	32-Geological Sci	
(10-840 192-55-62)			

NGR 05-010-062 University of California - Santa Barbara 1578
Planetary geophysics

Period	FY73:	Obligations	TOTAL:
03/01/73-08/31/73	\$30,000		\$26,828
Prin. Invest.	NASA Tech. Officer	CASE Category	
Peale, S. J.	HQ-SL/Dwornik, S. E.	32-Geological Sci	
	HQ-SL/Allingham, J. W.		
(10-840 384-50-80)			

NGR 05-010-081 University of California - Santa Barbara 1579
Lunar sample analysis

Period	FY73:	Obligations	TOTAL:
02/01/73-01/31/74	\$57,425		\$57,425
Prin. Invest.	NASA Tech. Officer	CASE Category	
Tilton, G. R.	JSC/Harris, J. W.	32-Geological Sci	
(72-910 914-40-00)			

NGL 05-061-004 University of California - Santa Cruz 1580
Geometrical influences on non-radioactive processes in organic molecules

Period	FY73:	Obligations	TOTAL:
06/24/68-06/01/72			\$44,052
Prin. Invest.	NASA Tech. Officer	CASE Category	
Evelth, E. M.	ARC/Reinesch, R.	12-Chemistry	
(21-740 129-00-00)			

NGR 05-061-006 University of California - Santa Cruz 1581
Cassegrain instrumentation for the Lick Observatory 120 inch telescope

Period	FY73:	Obligations	TOTAL:
04/21/69-04/30/73			\$199,300
Prin. Invest.	NASA Tech. Officer	CASE Category	
Wampler, E. J.	HQ-SG/Ott, E. J.	11-Astronomy	
	HQ-SG/Roman, N. G.		
(10-850 188-00-00)	(10-850 188-41-51)		

NGR 05-061-014 University of California - Santa Cruz 1582
Publication support for an instrumentation conference at Lick Observatory

Period	FY73:	Obligations	TOTAL:
08/30/71-08/31/72			\$3,440
Prin. Invest.	NASA Tech. Officer	CASE Category	
Wampler, E. J.	HQ-SG/Roman, N. G.	11-Astronomy	
	HQ-SG/Aucremann, M. J.		
(10-850 188-41-51)			

NGR 05-061-015 University of California - Santa Cruz 1583
Infrared instrumentation

Period	FY73:	Obligations	TOTAL:
07/06/72-10/31/73	\$15,627		\$15,627
Prin. Invest.	NASA Tech. Officer	CASE Category	
Rank, D. M.	HQ-SG/Bogges, N. W.	11-Astronomy	
	HQ-SG/Roman, N. G.		
(10-850 188-41-55)			

NAS 2-7059 University of San Francisco 1584
Apollo radiation dosimetry

Period	FY73:	Obligations	TOTAL:
06/14/72-06/30/74	\$77,131		\$92,131
Prin. Invest.	NASA Tech. Officer	CASE Category	
Benton, E. V.	ARC/Tremor, J. W.	19-Phys Sci, NEC	
(21-970 970-21-63)			

NAS 8-26758 University of San Francisco 1585
Study for heavy particle, passive, personnel dosimetry using etched particles

Period	FY73:	Obligations	TOTAL:
01/21/71-05/15/74			\$61,504
Prin. Invest.	NASA Tech. Officer	CASE Category	
Benton, E. V.	MSFC/Parnell, T. A.	13-Physics	
(62-740 114-03-05)	(62-742 124-09-21)		

NAS 9-12466 University of San Francisco 1586
Dosimetry materials

Period	FY73:	Obligations	TOTAL:
02/02/72-10/01/74	\$48,000		\$120,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Benton, E. V.	JSC/Bailey, J. V.	13-Physics	
(72-910 914-50-00)			

NAS 8-27799 University of Santa Clara 1587
Study of algebraic methods for analysis and design of attitude control systems

Period	FY73:	Obligations	TOTAL:
06/30/71-01/20/74	\$15,486		\$56,194
Prin. Invest.	NASA Tech. Officer	CASE Category	
Siljak, D. D.	MSFC/Seltzer, S. M.	49-Engr, NEC	
	MSFC/Nurre, G. S.		
(62-980 908-54-08)	(62-840 186-68-64)		

NGR 05-017-010 University of Santa Clara 1588
Extension of Mitrovics method for the analysis and design of dynamic systems

Period	FY73:	Obligations	TOTAL:
01/01/67-11/01/73	\$30,000		\$155,896
Prin. Invest.	NASA Tech. Officer	CASE Category	
Siljak, D. D.	ARC/Doolin, B. F.	49-Engr, NEC	
	ARC/Meyer, G.		
(21-704 501-03-11)			

**NASA'S UNIVERSITY PROGRAM
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NGR 05-017-019			University of Santa Clara			1589
A study of methods for the production and confinement of high energy plasmas						
<i>Period</i>		<i>Obligations</i>				
09/12/69-09/01/72	FY73:	TOTAL: \$116,143				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Cheng, D. Y.	ARC/Stine, H.	46-Mech Engr				
(21-720 112-02-22)	(21-740 129-00-00)	(21-740 129-02-22)				
NGR 05-017-023			University of Santa Clara			1590
Studying the applicability of fluidic control technology to a rankine-cycle automotive engine						
<i>Period</i>		<i>Obligations</i>				
03/04/70-06/30/73	FY73:	TOTAL: \$8,750				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Ian, M. R.	ARC/Chisel, D.	46-Mech Engr				
(21-750 125-00-00)						
NGR 05-017-027			University of Santa Clara			1591
Planetary geology-stellar evolution						
<i>Period</i>		<i>Obligations</i>				
03/31/71-05/31/74	FY73: \$116,256	TOTAL: \$167,798				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Barker, W. A.	ARC/Poppoff, L.	11-Astronomy				
(21-810 195-42-50)	(21-810 383-09-59)	(21-840 185-47-67)				
NGR 05-017-028			University of Santa Clara			1592
Use of ultrasonic-Doppler transcutaneous flow transducers for monitoring human cardiovascular performance under centrifuge acceleration						
<i>Period</i>		<i>Obligations</i>				
11/24/71-12/14/72	FY73:	TOTAL: \$8,988				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Mancini, R. E.	ARC/Sandler, H.	53-Other Medical				
(21-970 970-23-30)						
NGR 05-017-029			University of Santa Clara			1593
Study of compressible turbulent flow fields						
<i>Period</i>		<i>Obligations</i>				
12/08/71-01/01/73	FY73: \$51,262	TOTAL: \$87,967				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Owen, F. K.	ARC/Marvin, J. G.	41-Aero Engr				
(21-704 502-07-01)	(21-702 768-83-01)	(21-790 797-00-00)				
NGR 05-017-031			University of Santa Clara			1594
Evaluation of STOL navigation avionics						
<i>Period</i>		<i>Obligations</i>				
05/10/72-05/30/75	FY73:	TOTAL: \$140,000				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Dunn, W. R.	ARC/Hruly, R.	41-Aero Engr				
(21-760 136-63-02)	(21-763 133-17-10)					
NGR 05-017-033			University of Santa Clara			1595
Study of viscous flow fields						
<i>Period</i>		<i>Obligations</i>				
09/05/72-08/31/73	FY73: \$42,986	TOTAL: \$42,986				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Cheng, D. Y.	ARC/Pfyl, F. A.	41-Aero Engr				
	ARC/Schwartz, I. R.					
(21-702 768-83-01)	(21-704 501-04-01)					
NGR 05-017-034			University of Santa Clara			1596
Study ultrasonic-Doppler flow devices for blood flow monitoring						
<i>Period</i>		<i>Obligations</i>				
09/26/72-06/30/73	FY73: \$29,155	TOTAL: \$29,155				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Mancini, R. E.	ARC/Sandler, H.	53-Other Medical				
(21-970 970-21-61)	(21-970 970-23-30)					
NGR 05-017-037			University of Santa Clara			1597
Mapping geology of Mars quadrangle MC-6 Casius						
<i>Period</i>		<i>Obligations</i>				
01/01/73-12/31/73	FY73: \$7,531	TOTAL: \$7,531				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Greeley, R.	HQ-SL/Dwornik, S. E.	32-Geological Sci				
	HQ-SL/Aillingham, J. W.					
(10-840 384-50-80)						
NAS 2-5608			University of Southern California			1598
UV instrument						
<i>Period</i>		<i>Obligations</i>				
07/24/69-04/30/73	FY73: \$24,888	TOTAL: \$957,888				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Judge, D. L.	ARC/Hall, C. F.	13-Physics				
(21-840 811-22-00)						
NAS 2-6558			University of Southern California			1599
Pioneer F/G analysis of ultraviolet experiment						
<i>Period</i>		<i>Obligations</i>				
09/01/71-05/31/75	FY73: \$51,328	TOTAL: \$146,082				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Judge, D. L.	ARC/Hall, C. F.	13-Physics				
(21-840 811-22-00)						
NAS 3-17857			University of Southern California			1600
Jet noise basic research program						
<i>Period</i>		<i>Obligations</i>				
06/29/73-06/28/74	FY73: \$27,290	TOTAL: \$27,290				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Laufer, J.	LERC/Dorsch, R. G.	41-Aero Engr				
(22-704 501-04-01)						
NAS 5-21505			University of Southern California			1601
Advanced data compression experiments						
<i>Period</i>		<i>Obligations</i>				
06/04/70-10/31/73	FY73: \$5,000	TOTAL: \$294,162				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Davison, L. D.	GSFC/Kutz, R. L.	45-Elec Engr				
(51-680 602-43-00)	(51-680 160-20-52)	(51-680 160-00-00)				
NAS 8-28305			University of Southern California			1602
Skylab experiment mixed 111-2V crystal growth analysis effort						
<i>Period</i>		<i>Obligations</i>				
10/19/72-04/30/74	FY73: \$47,000	TOTAL: \$47,000				
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>				
Wilcox, W. R.	MSFC/Adams, W. R.	19-Phys Sci, NEC				
	MSFC/Davidson, M. C.					
(62-960 948-90-95)						

**NASA'S UNIVERSITY PROGRAM
CALIFORNIA (Continued)**

NAS 8-29847 University of Southern California 1603
Study of analytics of crystal growth in space
Period *Obligations*
06/05/73-06/05/74 FY73: \$25,030 TOTAL: \$25,030
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wilcox, W. R. MSFC/Bannister, T. C. 13-Physics
MSFC/Facemire, B. E.
(62-980 975-90-95)

NAS 9-6164 University of Southern California 1604
Proton accelerator studies
Period *Obligations*
06/01/66-06/01/77 FY73: TOTAL: \$8,004
Prin. Invest. *NASA Tech. Officer* *CASE Category*
JSC/ 13-Physics
(72-910 914-14-00)

NASW 1869 University of Southern California 1605
Operation of the Western Research Application Center
Period *Obligations*
04/24/69-01/31/72 FY73: TOTAL: \$837,040
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Ehrenreich, J. W. HQ-KT/Carlson, J. M. 99-Multi-Discip
HQ-KT/Philips, R. J.
(10-250 141-00-00) (10-250 141-93-00)

NASW 2360 University of Southern California 1606
Regional dissemination center operation in the Western Research Application Center
Period *Obligations*
04/21/72-01/31/74 FY73: \$132,808 TOTAL: \$452,808
Prin. Invest. *NASA Tech. Officer* *CASE Category*
HQ-KT/Holley, H. L. 99-Multi-Discip
HQ-KT/Carlson, J. M.
(10-250 141-93-01) (10-250 141-93-00)

NGL 05-018-003 University of Southern California 1607
Role of experiences in etiology of animal and human physiological and behavioral responses to situational stress in later life
Period *Obligations*
07/01/73-09/01/73 FY73: TOTAL: \$777,168
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Henry, J. P. HQ-MM/Belleville, R. E. 51-Biology
(10-870 189-00-00) (21-870 189-52-62) (10-860 866-00-00)

NGL 05-018-044 University of Southern California 1608
Multidisciplinary research in the space-related engineering, physical, biological, and social sciences
Period *Obligations*
06/27/66-01/01/73 FY73: TOTAL: \$1,000,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bichael, H. HQ-PY/Redding, E. R. 99-Multi-Discip
(10-370 183-00-00)

NGL 05-018-118 University of Southern California 1609
Advanced communications techniques
Period *Obligations*
10/09/69-06/01/74 FY73: \$20,000 TOTAL: \$90,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Davisson, L. D. GSFC/Kutz, R. L. 45-Elec Engr
GSFC/Miller, J. E.
(51-680 602-43-00)

NGR 05-018-122 University of Southern California 1610
Role of atrial receptors in the control of sodium excretion
Period *Obligations*
03/24/70-12/31/72 FY73: TOTAL: \$55,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mechan, J. P. JSC/Jackson, M. M. 51-Biology
(72-910 914-51-00) (72-910 914-50-00)

NGR 05-018-138 University of Southern California 1611
Space flight detector evaluation and general laboratory research on atmospheric constituents
Period *Obligations*
02/17/70-07/31/72 FY73: TOTAL: \$66,952
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Judge, D. L. HQ-SL/Fellows, R. F. 31-Atmos Sci
HQ-SL/Hipsher, H. F.
(10-840 185-00-00) (10-840 185-47-83)

NGR 05-018-140 University of Southern California 1612
Experiments in hypersonic turbulent boundary layers
Period *Obligations*
12/31/69-02/28/73 FY73: TOTAL: \$24,203
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Laufer, J. LARC/Weinstein, L. 41-Aero Engr
LARC/Bushnell, D. M.
(23-740 129-00-00)

NGR 05-018-178 University of Southern California 1613
Dynamics of rotating-stratified flows with applications to the Jovian atmosphere
Period *Obligations*
09/11/72-08/01/73 FY73: \$37,367 TOTAL: \$37,367
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Maxworthy, T. HQ-SL/Fellows, R. F. 31-Atmos Sci
HQ-SL/Hipsher, H. F.
(10-840 185-47-81)

NGR 05-018-180 University of Southern California 1614
Photon-molecule interaction studies of the atmospheric gases
Period *Obligations*
08/31/72-07/01/73 FY73: \$26,310 TOTAL: \$26,310
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Judge, D. L. HQ-SL/Fellows, R. F. 31-Atmos Sci
(10-840 185-47-83)

NGR 05-018-181 University of Southern California 1615
Analysis of Pioneer solar wind observations of the interplanetary medium
Period *Obligations*
10/25/72-09/01/73 FY73: \$40,000 TOTAL: \$40,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Intriligator, D. S. HQ-SG/Kavanagh, L. D., Jr. 13-Physics
HQ-SG/Schmerling, E. R.
(10-850 385-36-00)

NGR 05-018-185 University of Southern California 1616
Study of the structure of magnetopause using simultaneous OGO-5 magnetic field light ion mass
Period *Obligations*
06/27/73-06/30/74 FY73: \$25,795 TOTAL: \$25,795
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Intriligator, D. S. HQ-SG/Calahan, H. D. 13-Physics
HQ-SG/Kavanagh, L. D.
(10-850 385-36-00)

NASA'S UNIVERSITY PROGRAM **CALIFORNIA (Continued)**

NGT 05-018-085 **University of Southern California** **1617**
Training of predoctoral graduate students in public administration with emphasis on policy development, management, administration of large scientific & technological program

Period	FY73:	Obligations	TOTAL:
06/26/67-08/01/72			\$315,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Reining, H., Jr.	HQ-PY/Carter, C. H.	99-Multi-Discip	
(10-370 181-00-00)			

NGT 05-018-127 **University of Southern California** **1618**
Training of graduate students in the field of communication sciences

Period	FY73:	Obligations	TOTAL:
08/11/69-08/01/73			\$191,400
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kaprielian, Z. A.	HQ-PY/Carter, C. H.	49-Engr, NEC	
(10-370 181-00-00)			

NSR 05-018-087 **University of Southern California** **1619**
Observation of arterial blood pressure of the primate

Period	FY73:	Obligations	TOTAL:
07/10/68-11/30/72			\$382,548
Prin. Invest.	NASA Tech. Officer	CASE Category	
Meehan, J. P.	HQ-MM/Saunders, J. F.	59-Life Sci, NEC	
(10-980 945-82-00)	(10-980 975-82-00)	(10-870 189-73-62)	

COLORADO

NAS 5-21778 **Colorado School of Mines** **1620**
Investigation of geological, mineral & water resources in Western Colorado

Period	FY73:	Obligations	TOTAL:
06/30/72-03/01/74			\$106,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Reeves, R. G.	GSFC/Stonesifer, G. R.	32-Geological Sci	
(51-680 641-14-03)	(51-680 641-14-00)		

NAS 8-30511 **Colorado School of Mines** **1621**
Research in phase change thermal control technology

Period	FY73:	Obligations	TOTAL:
11/21/68-10/01/72			\$50,307
Prin. Invest.	NASA Tech. Officer	CASE Category	
Stermole, F. J.	MSFC/Bannister, T. C.	43-Chem Engr	
(62-742 124-00-00)	(62-742 124-09-26)		

NAS 9-13394 **Colorado School of Mines** **1622**
Geologic, mineral, & water resource investigation in Western Colorado using EREP data

Period	FY73:	Obligations	TOTAL:
05/25/73-12/31/74			\$80,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lee, K.	JSC/Miller, M.	32-Geological Sci	
(72-960 948-63-83)			

NGL 06-001-015 **Colorado School of Mines** **1623**
Application of remote sensor data to geologic & economic analyses of the Bonanza test site

Period	FY73:	Obligations	TOTAL:
03/11/69-03/31/75			\$74,980
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lee, K.	HQ-ER/Park, A. B.	39-Env Sci, NEC	
	HQ-PY/Vitale, J. A.		
(10-680 160-75-80)	(10-370 183-00-00)	(10-371 340-00-00)	

NAS 1-12106 **Colorado State University** **1624**
Development of data test sets & simulation models for long term zonal earth energy budget experiment

Period	FY73:	Obligations	TOTAL:
02/06/73-05/22/74			\$20,184
Prin. Invest.	NASA Tech. Officer	CASE Category	
Vonder Haar, T. H.	LARC/Sweet, G. E.	31-Atmos Sci	
	LARC/Woerner, C. V.		
(23-680 160-44-9X)			

NAS 2-6585 **Colorado State University** **1625**
Aircraft support of aerobiology study

Period	FY73:	Obligations	TOTAL:
08/16/71-10/01/71			\$27,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Adam, D. D.	ARC/Bell, N. L.	51-Biology	
	ARC/Sebesta, P. D.		
(21-680 160-75-81)	(21-870 189-57-62)		

NAS 2-6615 **Colorado State University** **1626**
Study plant tumor tissues on clinostats & in space environment

Period	FY73:	Obligations	TOTAL:
09/10/71-12/10/73			\$19,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Baker, R.	ARC/Tremor, J. W.	51-Biology	
(21-970 970-21-61)			

NAS 2-7396 **Colorado State University** **1627**
Development of wind model for elevated STOL port configuration

Period	FY73:	Obligations	TOTAL:
01/19/73-07/18/73			\$15,045
Prin. Invest.	NASA Tech. Officer	CASE Category	
Cermak, J. E.	ARC/Wempe, T. E.	49-Engr, NEC	
Peterka, J. A.			
(21-704 501-9X-00)			

NAS 3-17213 **Colorado State University** **1628**
Remote measuring of lake ice thickness

Period	FY73:	Obligations	TOTAL:
03/10/73-04/09/73			\$14,200
Prin. Invest.	NASA Tech. Officer	CASE Category	
Veckers, R. S.	LERC/Gedney, R. T.	33-Oceanography	
(22-701 598-85-00)	(22-701 599-85-00)		

NAS 8-26234 **Colorado State University** **1629**
Comparison tests for atmospheric laser Doppler systems

Period	FY73:	Obligations	TOTAL:
06/16/70-06/30/73			\$5,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Karaki, S.	MSFC/Jones, I. P.	41-Aero Engr	
	MSFC/Huffaker, R. M.		
(62-704 501-38-13)			

NASA'S UNIVERSITY PROGRAM COLORADO (Continued)

NAS 8-26551 **Colorado State University** **1630**
Improved simulation techniques for turbopump rotating assembly dynamics

Period	FY73:	Obligations	TOTAL:
10/21/70-10/01/71			\$19,999

Prin. Invest. NASA Tech. Officer CASE Category
Childs, D. W. MSFC/Miller, C. 46-Mech Engr
(62-710 128-31-63)

NAS 8-28590 **Colorado State University** **1631**
Feasibility of remote evaporation and precipitation estimates

Period	FY73:	Obligations	TOTAL:
05/18/72-09/17/73			\$99,000

Prin. Invest. NASA Tech. Officer CASE Category
Sadeh, W. Z. MSFC/Turner, R. E. 39-Env Sci, NEC
Ruff, T. F. MSFC/Cummings, R. E.
(62-910 933-50-00)

NAS 8-28655 **Colorado State University** **1632**
Feasibility of aircraft surveys for stream discharge prediction

Period	FY73:	Obligations	TOTAL:
05/01/72-08/31/73			\$40,000

Prin. Invest. NASA Tech. Officer CASE Category
Marchner, B. W. MSFC/Sloan, J. C. 39-Env Sci, NEC
MSFC/Turner, R. E.
(62-910 933-50-00)

NAS 8-29583 **Colorado State University** **1633**
Wind tunnel investigation of wakes downwind of buildings and natural obstacles

Period	FY73:	Obligations	TOTAL:
05/23/73-05/23/74	\$28,511		\$28,511

Prin. Invest. NASA Tech. Officer CASE Category
Cermak, J. E. MSFC/Camp, D. W. 44-Civil Engr
MSFC/Walker, R. W.
(62-704 501-08-10)

NAS 9-12972 **Colorado State University** **1634**
Investigation of preprocessing transformation

Period	FY73:	Obligations	TOTAL:
06/27/72-06/30/74			\$71,970

Prin. Invest. NASA Tech. Officer CASE Category
Smith, J. JSC/Dragg, J. 31-Atmos Sci
(72-680 160-75-56)

NAS 9-13142 **Colorado State University** **1635**
Applications of remote sensing in hydrological modeling of river basins

Period	FY73:	Obligations	TOTAL:
09/11/72-08/31/73	\$18,000		\$18,000

Prin. Invest. NASA Tech. Officer CASE Category
Striffler, W. D. JSC/Mason, C. C. 32-Geological Sci
(72-680 160-75-56)

NGL 06-002-063 **Colorado State University** **1636**
Stress intensity factors for surface flawed fracture specimens

Period	FY73:	Obligations	TOTAL:
02/17/69-01/01/75	\$13,673		\$143,408

Prin. Invest. NASA Tech. Officer CASE Category
Smith, F. W. LERC/Misencik, J. A. 46-Mech Engr
LERC/Smith, G. T.
(22-704 502-22-03) (22-742 124-08-42) (22-742 124-00-00)

NGR 06-002-075 **Colorado State University** **1637**
Metabolic effects of artificial environment

Period	FY73:	Obligations	TOTAL:
10/18/68-10/31/73	\$38,000		\$203,000

Prin. Invest. NASA Tech. Officer CASE Category
Jordan, J. P. WS/Holton, E. M. 51-Biology
WS/Jackson, E. B.
(53-970 970-71-61)

NGR 06-002-094 **Colorado State University** **1638**
A thin polymer insulator for Josephson tunneling applications

Period	FY73:	Obligations	TOTAL:
04/05/70-05/01/73	\$1,300		\$74,552

Prin. Invest. NASA Tech. Officer CASE Category
Wilmsen, C. W. LERC/Laurence, J. C. 13-Physics
LERC/Brown, G. V.
(22-704 503-10-02) (10-740 129-00-00) (10-740 129-02-21)

NGR 06-002-095 **Colorado State University** **1639**
Combustion instability with partial length acoustic lines

Period	FY73:	Obligations	TOTAL:
12/02/69-12/01/73	\$29,992		\$164,680

Prin. Invest. NASA Tech. Officer CASE Category
Mitchell, C. E. LERC/Priem, R. J. 46-Mech Engr
(22-704 502-04-25)

NGR 06-002-098 **Colorado State University** **1640**
Atmospheric transport processes as evaluated from Nimbus 111 satellite data

Period	FY73:	Obligations	TOTAL:
04/13/70-07/31/73	\$45,000		\$167,787

Prin. Invest. NASA Tech. Officer CASE Category
Reiter, E. R. GSFC/Solomonson, V. V. 31-Atmos Sci
Vonderhaar, T. H.
(51-680 160-44-51)

NGR 06-002-102 **Colorado State University** **1641**
Studies of radiation measurements from polar and geosynchronous satellites

Period	FY73:	Obligations	TOTAL:
09/23/70-09/30/73	\$46,000		\$161,000

Prin. Invest. NASA Tech. Officer CASE Category
Vonder Haar, T. H. GSFC/Wexler, R. 31-Atmos Sci
(51-680 160-44-51)

NGR 06-002-112 **Colorado State University** **1642**
An experimental investigation of hollow cathode discharge startup and operation

Period	FY73:	Obligations	TOTAL:
12/21/70-11/30/73	\$50,541		\$136,687

Prin. Invest. NASA Tech. Officer CASE Category
Wilbur, P. J. LERC/Kerslake, W. R. 42-Astro Engr
Lockwood, D. L.
(22-704 502-24-03)

NGR 06-002-119 **Colorado State University** **1643**
Mechanism of increased growth of plants to lunar samples responses

Period	FY73:	Obligations	TOTAL:
06/21/72-01/31/74	\$53,380		\$95,980

Prin. Invest. NASA Tech. Officer CASE Category
Lindsay, W. A. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NASA'S UNIVERSITY PROGRAM
COLORADO (Continued)

NGR 06-002-127		Colorado State University	1644
Investigation of electrohydrodynamic heat pipes			
<i>Period</i>		<i>Obligations</i>	
04/29/71-11/01/73	FY73: \$6,275	TOTAL: \$24,945	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jones, T. B.	ARC/Kirkpatrick, J. P.	46-Mech Engr	
	ARC/Wilbur, A. C.		
(21-704 502-21-27)			
NGR 06-002-128		Colorado State University	1645
Effect of cosmic radiation			
<i>Period</i>		<i>Obligations</i>	
08/31/72-09/01/73	FY73: \$65,000	TOTAL: \$65,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Leti, J. T.	HQ-MM/Saunders, J. F.	51-Biology	
	JSC/Benson, R. E.		
(72-970 970-51-63) (10-970 970-11-63)			
NGR 06-002-147		Colorado State University	1646
Theoretical investigations on plasma processes in the Kaufman thruster			
<i>Period</i>		<i>Obligations</i>	
04/14/72-06/22/74	FY73: \$27,350	TOTAL: \$54,700	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Wilhelm, H. E.	LERC/Serafini, J. S.	42-Astro Engr	
(22-704 502-04-01)			
NGR 06-002-166		Colorado State University	1647
Course development in space sciences			
<i>Period</i>		<i>Obligations</i>	
12/04/72-12/01/73	FY73: \$9,288	TOTAL: \$9,288	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ogg, J. E.	ARC/Winter, D. L.	51-Biology	
	ARC/Klein, H. P.		
(21-970 970-24-01)			
NGT 06-002-002		Colorado State University	1648
Training of graduate students in space-related science and technology			
<i>Period</i>		<i>Obligations</i>	
04/01/63-08/01/72	FY73:	TOTAL: \$517,201	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bragonier, W. H.	HQ-PY/Carter, C. H.	99-Multi-Discip	
(10-370 181-00-00)			
NAS 1-10388		University of Colorado - Boulder	1649
Development of an engineering model spectrometer for an ultraviolet atmospheric ozone profile experiment			
<i>Period</i>		<i>Obligations</i>	
10/28/70-09/30/72	FY73:	TOTAL: \$127,387	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Barth, C. A.	LARC/Spiers, R. B.	31-Atmos Sci	
	LARC/Kopia, L. P.		
(23-620 630-00-00)			
NAS 5-3931		University of Colorado - Boulder	1651
Research on Orbiting Solar Observatory /OSO-E/			
<i>Period</i>		<i>Obligations</i>	
06/25/64-07/01/71	FY73:	TOTAL: \$767,905	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rense, W. A.	GSFC/Staff, W. O.	13-Physics	
(51-850 821-00-00) (51-850 821-22-00)			
NAS 5-9307		University of Colorado - Boulder	1652
Ultraviolet photometer experiment for the Orbiting Geophysical Observatory mission F /OGO-F/			
<i>Period</i>		<i>Obligations</i>	
03/31/66-09/30/72	FY73:	TOTAL: \$402,300	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Barth, C. A.	GSFC/Meese, K. J.	13-Physics	
(51-850 841-00-00) (51-850 841-12-00)			
NAS 5-9327		University of Colorado - Boulder	1653
Ultraviolet photometer experiment for the Orbiting Geophysical Observatory mission E /OGO-E/			
<i>Period</i>		<i>Obligations</i>	
03/31/66-12/31/72	FY73: \$7,970	TOTAL: \$551,570	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thomas, G. E.	GSFC/Meese, K. J.	13-Physics	
(51-850 841-00-00)			
NAS 5-11363		University of Colorado - Boulder	1654
OSO-I pointed experiment hardware			
<i>Period</i>		<i>Obligations</i>	
06/22/71-12/31/73	FY73: \$1,447,000	TOTAL: \$3,030,593	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brunner, E. C.	GSFC/Donley, J. L.	13-Physics	
	GSFC/Scott, D. H.		
(51-850 821-32-00)			
NAS 5-11405		University of Colorado - Boulder	1655
Ultraviolet nitric oxide experiment for atmosphere Explorer			
<i>Period</i>		<i>Obligations</i>	
03/17/71-03/15/75	FY73: \$140,000	TOTAL: \$475,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Barth, C. A.	GSFC/Findlay, J. A.	31-Atmos Sci	
	GSFC/Grimes, D. W.		
(51-850 852-22-00)			
NGL 06-003-052		University of Colorado - Boulder	1656
Theoretical and experimental research program in physics of planetary atmospheres			
<i>Period</i>		<i>Obligations</i>	
06/28/66-06/01/74	FY73: \$353,365	TOTAL: \$2,508,024	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Barth, C. A.	HQ-SL/Fellows, R. F.	31-Atmos Sci	
	HQ-SL/Hipsher, H. F.		
(10-840 185-47-83)			
NGL 06-003-057		University of Colorado - Boulder	1657
Basic research in solar physics			
<i>Period</i>		<i>Obligations</i>	
09/05/67-08/31/75	FY73: \$90,000	TOTAL: \$488,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Smith, S. J.	HQ-SG/Weldon, J. M.	11-Astronomy	
	HQ-SG/Oertel, G. K.		
(10-850 385-38-00) (10-850 188-38-53)			

NASA'S UNIVERSITY PROGRAM **COLORADO (Continued)**

NGL 06-003-064 University of Colorado - Boulder 1658
Rocket research program in the ultraviolet airglow and aurora of planetary atmospheres

Period	Obligations
11/30/67-08/31/75	FY73: \$150,122 TOTAL: \$999,122
Prin. Invest.	NASA Tech. Officer CASE Category
Barth, C. A.	HQ-SG/Dubin, M. 31-Atmos Sci
	HQ-SG/Fellows, R.
(10-850 879-11-00)	(10-850 879-00-00)

NGL 06-003-200 University of Colorado - Boulder 1659
Application of space technology to practical problems such as those currently facing the mountain sections of the State of Colorado

Period	Obligations
07/11/72-04/01/75	FY73: \$150,000 TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ines, J. D.	HQ-PY/Vitale, J. A. 39-Env Sci, NEC
(10-371 340-00-00)	

NGR 06-003-069 University of Colorado - Boulder 1660
Solar physics research

Period	Obligations
11/29/67-08/31/73	FY73: \$99,969 TOTAL: \$767,801
Prin. Invest.	NASA Tech. Officer CASE Category
Rense, W. A.	HQ-SG/Weldon, J. M. 11-Astronomy
	HQ-SG/Ott, E. J.
(10-850 879-11-00)	

NGR 06-003-092 University of Colorado - Boulder 1661
Analysis of IMP-C data from the magnetospheric tail

Period	Obligations
11/01/68-05/31/73	FY73: TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer CASE Category
Speiser, T. W.	HQ-SG/Kavanagh, L. D. 13-Physics
	HQ-SG/Schardt, A. W.
(10-850 385-00-00)	

NGR 06-003-127 University of Colorado - Boulder 1662
Data reduction-coordinated experiments

Period	Obligations
08/18/69-06/30/73	FY73: TOTAL: \$467,861
Prin. Invest.	NASA Tech. Officer CASE Category
Barth, C. A.	HQ-SL/Fellows, R. F. 31-Atmos Sci
	HQ-SL/Hipsher, H. F.
(10-840 384-47-81)	

NGR 06-003-160 University of Colorado - Boulder 1663
Point-contact junction detectors

Period	Obligations
06/17/70-08/31/73	FY73: TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
Baird, J. R.	HQ-ER/Lehmann, J. 45-Elec Engr
	HQ-PY/Vitale, J. A.
(10-680 160-00-00)	(10-680 160-20-58)

NGR 06-003-176 University of Colorado - Boulder 1664
Rocket research program in stellar ultraviolet astronomy

Period	Obligations
12/29/71-12/31/72	FY73: \$11,255 TOTAL: \$61,255
Prin. Invest.	NASA Tech. Officer CASE Category
Lillie, C. F.	HQ-SG/Roman, N. G. 11-Astronomy
	HQ-SG/Ott, E. J.
(10-850 879-11-00)	

NGR 06-003-177 University of Colorado - Boulder 1665
Photogeologic study of Martian and other surface features in preparation for analysis of Mariner 71 photographs

Period	Obligations
03/05/71-05/31/72	FY73: TOTAL: \$10,700
Prin. Invest.	NASA Tech. Officer CASE Category
Peterson, J. E.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Morris, E. C.
(10-840 384-50-80)	

NGR 06-003-179 University of Colorado - Boulder 1666
OAO-II data analysis program

Period	Obligations
06/07/71-12/31/73	FY73: \$22,000 TOTAL: \$41,100
Prin. Invest.	NASA Tech. Officer CASE Category
Lillie, C. F.	HQ-SG/Roman, N. G. 11-Astronomy
	HQ-SG/Kelsall, T.
(10-850 385-41-00)	

NGR 06-003-181 University of Colorado - Boulder 1667
Lunar sample analysis

Period	Obligations
06/24/71-01/31/74	FY73: \$22,795 TOTAL: \$54,620
Prin. Invest.	NASA Tech. Officer CASE Category
Larson, E. E.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NGR 06-003-184 University of Colorado - Boulder 1668
Mission definition phase of Grand Tour mission photo-polarimetry investigation for outer planets missions

Period	Obligations
04/12/71-08/31/72	FY73: TOTAL: \$34,500
Prin. Invest.	NASA Tech. Officer CASE Category
Lillie, C. F.	HQ-SL/Mitz, M. A. 31-Atmos Sci
	HQ-SL/Keller, J. W.
(10-840 186-68-68)	(10-840 186-68-52)

NGR 06-003-185 University of Colorado - Boulder 1669
Planetary radio astronomy team during the mission definition phase of the outer planets Grand Tour missions

Period	Obligations
07/20/71-09/30/72	FY73: TOTAL: \$138,600
Prin. Invest.	NASA Tech. Officer CASE Category
	HQ-SG/ 11-Astronomy
(10-840 186-68-68)	

NGR 06-003-199 University of Colorado - Boulder 1670
Geologic analysis of Martian surface features from Mariner 9 photography as a basis for systematic geologic mapping of Mars

Period	Obligations
05/24/72-05/31/74	FY73: \$15,000 TOTAL: \$25,715
Prin. Invest.	NASA Tech. Officer CASE Category
Peterson, J. E.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Allingham, J. W.
(10-840 384-50-80)	

NGR 06-003-201 University of Colorado - Boulder 1671
Analysis of data from satellite experiments

Period	Obligations
09/11/72-06/01/73	FY73: \$131,552 TOTAL: \$131,552
Prin. Invest.	NASA Tech. Officer CASE Category
Thomas, G. E.	HQ-SL/Fellows, R. F. 31-Atmos Sci
	HQ-SL/Hipsher, H. F.
(10-840 384-47-81)	

NASA'S UNIVERSITY PROGRAM **COLORADO (Continued)**

NGR 06-003-205 **University of Colorado - Boulder** **1672**
Ion-implanted, epitaxially-grown ZnSe

Period	Obligations
10/01/72-09/01/73	FY73: \$29,985 TOTAL: \$29,985
Prin. Invest.	NASA Tech. Officer
Chernow, F.	LARC/Hutchby, J. A.
	LARC/Hendricks, H. D.
	CASE Category 13-Physics

(23-704 502-03-53)

NGR 06-003-208 **University of Colorado - Boulder** **1673**
Energy transfer in isotropic turbulence

Period	Obligations
09/05/72-08/01/73	FY73: \$20,000 TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer
Uberoi, M. S.	LERC/Deissler, R. G.
	CASE Category 41-Aero Engr

(22-704 502-04-25)

NAS 5-9883 **University of Denver** **1674**
GEOS tracking system camera site

Period	Obligations
07/26/65-01/01/77	FY73: TOTAL: \$61,675
Prin. Invest.	NASA Tech. Officer
	GSFC/
	CASE Category 32-Geological Sci

(51-500 311-00-00) (51-630 855-33-00)

NAS 5-23190 **University of Denver** **1675**
Construction of a 31.4 GHz parametric amplifier

Period	Obligations
03/16/73-03/16/74	FY73: \$16,972 TOTAL: \$16,972
Prin. Invest.	NASA Tech. Officer
Edrich, J.	GSFC/Hobbs, R. W.
	CASE Category 13-Physics

(51-850 188-38-52)

NAS 8-27277 **University of Denver** **1676**
Development of explosively bonded TZM wire reinforced by columbian sheet composites

Period	Obligations
05/17/71-08/01/72	FY73: TOTAL: \$38,410
Prin. Invest.	NASA Tech. Officer
Otto, H. E.	MSFC/Rcece, O. Y.
	CASE Category 47-Materials Engr

(62-740 129-03-29)

NAS 8-28216 **University of Denver** **1677**
Development of techniques for remote sensing of environment

Period	Obligations
02/23/72-08/31/73	FY73: TOTAL: \$63,886
Prin. Invest.	NASA Tech. Officer
Howard, W. A.	MSFC/Paludan, C. T.
	CASE Category 39-Env Sci, NEC
	MSFC/Daniels, J. L., Jr.

(62-910 933-50-00)

NASW 2358 **University of Denver** **1678**
Collection and analysis of data relating to beneficial changes occurring in society

Period	Obligations
01/28/72-02/01/72	FY73: TOTAL: \$40,551
Prin. Invest.	NASA Tech. Officer
Kottenstette, J. P.	HQ-KT/Orrick, D. W.
	CASE Category 99-Multi-Discip

(10-250 141-94-00)

NASW 2362 **University of Denver** **1679**
Collection and analysis of information relating to technology transfer and application

Period	Obligations
04/05/72-01/13/74	FY73: \$230,000 TOTAL: \$475,000
Prin. Invest.	NASA Tech. Officer
Kottenstette, J. P.	HQ-KT/Orrick, D. W.
Freeman, J. E.	HQ-KT/Carlson, J. M.
	CASE Category 99-Multi-Discip

(10-250 141-94-00)

NGL 06-004-078 **University of Denver** **1680**
Program for the exploitation of unused NASA patents

Period	Obligations
06/18/68-05/01/72	FY73: TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer
Ezra, A. A.	HQ-PY/Vitale, J. A.
	CASE Category 99-Multi-Discip
	HQ-PY/Quinn, H. B.

(10-370 183-00-00)

NGL 06-004-096 **University of Denver** **1681**
Extending the universities role in the exploitation of aerospace technology

Period	Obligations
09/08/69-09/01/73	FY73: TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer
Blackledge, J. P.	HQ-PY/Redding, E. R.
	CASE Category 41-Aero Engr
	HQ-I/Barnes, R.

(10-370 183-00-00)

NGR 06-004-058 **University of Denver** **1682**
Study of hydromagnetic disturbances in the geomagnetic field at satellite altitudes

Period	Obligations
05/02/68-04/30/74	FY73: \$20,000 TOTAL: \$98,000
Prin. Invest.	NASA Tech. Officer
Patel, V. L.	HQ-SG/Kavanagh, L. D., Jr.
	CASE Category 13-Physics
	HQ-SG/Schmerling, E. R.

(10-850 385-36-00) (10-850 385-00-00)

NGR 06-004-060 **University of Denver** **1683**
Study of physical processes which govern the dynamics of geomagnetically trapped radiation

Period	Obligations
05/08/68-05/31/74	FY73: \$23,000 TOTAL: \$131,000
Prin. Invest.	NASA Tech. Officer
Roederer, J. G.	HQ-SG/Kavanagh, L. D.
	CASE Category 13-Physics
	HQ-SG/Schmerling, E. R.

(10-850 385-36-00) (10-850 385-00-00)

NGR 06-004-068 **University of Denver** **1684**
Effect of pulsed operations on performance of life support system components

Period	Obligations
12/26/67-04/30/72	FY73: TOTAL: \$51,032
Prin. Invest.	NASA Tech. Officer
Ross, L. W.	ARC/Quattrone, P. D.
	CASE Category 43-Chem Engr

(10-770 127-00-00) (10-770 127-53-29) (21-970 970-12-20)

NASA'S UNIVERSITY PROGRAM COLORADO (Continued)

NGR 06-004-114 **University of Denver** **1685**
Infrared observational research program

Period	Obligations	
07/29/71-05/01/72	FY73: TOTAL: \$97,300	
Prin. Invest.	NASA Tech. Officer	CASE Category
Murcay, D. G.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	

(10-850 405-06-01)

NGR 06-004-125 **University of Denver** **1686**
Space cabin atmospheric environments

Period	Obligations	
01/22/73-01/14/74	FY73: \$19,650 TOTAL: \$19,650	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ross, L. W.	ARC/Quattrone, P. D.	12-Chemistry

(21-970 970-22-21)

NGR 06-004-128 **University of Denver** **1687**
Quantitative spectroscopic studies of the 11.3 microns and 21.9 microns infrared bands of HNO 3 at stratospheric temperatures

Period	Obligations	
05/23/73-11/30/73	FY73: \$11,232 TOTAL: \$11,232	
Prin. Invest.	NASA Tech. Officer	CASE Category
Murcay, D. G.	LARC/Russell, J. M., III	31-Atmos Sci

(23-680 160-44-64)

NGT 06-004-008 **University of Denver** **1688**
Training of graduate students in space-related science and technology

Period	Obligations	
04/02/63-08/01/72	FY73: TOTAL: \$430,345	
Prin. Invest.	NASA Tech. Officer	CASE Category
Evers, N. H.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NSR 06-004-063 **University of Denver** **1689**
The analysis of information on technology transfer

Period	Obligations	
01/29/68-01/01/72	FY73: TOTAL: \$1,107,250	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kottenstette, J. P.	HQ-KT/Glassman, S. J.	99-Multi-Discip
	HQ-KT/Carlson, J. M.	

(10-250 141-00-00) (10-250 141-94-00)

CONNECTICUT

NGR 07-010-002 **Fairfield University** **1690**
Investigation of energy deposition processes in the upper atmosphere, and the interaction between the mesosphere and the thermosphere

Period	Obligations	
04/24/68-09/30/73	FY73: \$9,995 TOTAL: \$49,435	
Prin. Invest.	NASA Tech. Officer	CASE Category
McElaney, J. H.	GSFC/Heath, D. F.	31-Atmos Sci

(51-680 160-44-67) (51-680 160-44-55)

NGL 07-009-003 **Rensselaer Polytechnic Institute - Conn** **1691**
Investigation of a quadrupole ultra-high vacuum ion pump

Period	Obligations	
01/24/69-08/01/73	FY73: TOTAL: \$80,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Schwarz, H. J.	LARC/Yeager, P. R.	13-Physics
	LARC/Wood, G. M.	

(23-750 125-00-00) (23-750 125-24-04)

NGR 07-011-001 **Saint Joseph College - Connecticut** **1692**
Identification of aromatic hydrocarbons in spark discharge material and geological samples

Period	Obligations	
05/12/69-10/31/72	FY73: TOTAL: \$21,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Murphy, M. E.	HQ-SL/Young, R. S.	12-Chemistry

(10-840 192-55-62) (10-870 189-55-62) (21-910 914-40-00)

NAS 8-28734 **University of Connecticut** **1693**
Materials processing in space, sphere-forming & composite casting experiment

Period	Obligations	
05/24/72-06/18/74	FY73: \$20,350 TOTAL: \$27,350	
Prin. Invest.	NASA Tech. Officer	CASE Category
Katahis, T. Z.	MSFC/Hasemeyer, E. A.	47-Materials Engr
	MSFC/McPherson, W. B.	

(62-960 948-90-95)

NAS 9-10844 **University of Connecticut** **1694**
Study of effects of a closed microbial ecology

Period	Obligations	
05/19/70-02/01/72	FY73: TOTAL: \$56,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kenyon, A. J.	JSC/Mieszkuc, B. J.	59-Life Sci, NEC
	JSC/McQueen, J. L.	

(72-910 914-50-00) (72-770 127-49-22)

NAS 9-11575 **University of Connecticut** **1695**
Development of working methodology to determine and test biological activity of lunar soil

Period	Obligations	
01/26/71-12/01/71	FY73: TOTAL: \$10,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kenyon, A. J.	JSC/Holland, J. M.	59-Life Sci, NEC
	JSC/Alexander, W. C.	

(72-910 914-50-00)

NAS 9-11941 **University of Connecticut** **1696**
Immunological and physiological effects of microflora in spacecraft environments

Period	Obligations	
06/17/71-11/30/73	FY73: \$30,000 TOTAL: \$159,920	
Prin. Invest.	NASA Tech. Officer	CASE Category
Kenyon, A. J.	JSC/Mieszkuc, B. J.	59-Life Sci, NEC

(72-970 970-51-25) (72-910 914-51-00) (72-770 127-49-22)

NASA'S UNIVERSITY PROGRAM **CONNECTICUT (Continued)**

NASW 2307 **University of Connecticut** **1697**
Continued operation of the New England Research Application Center

Period	Obligations	
01/20/72-06/30/73	FY73: \$120,000	TOTAL: \$275,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-KT/Carlson, J. M.	99-Multi-Discip
	HQ-KT/Hamilton, J. T.	
(10-250 141-93-01)	(10-250 141-93-00)	

NASW 2516 **University of Connecticut** **1698**
Regional dissemination center operation

Period	Obligations	
06/28/73-06/30/75	FY73: \$13,000	TOTAL: \$13,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-KT/	99-Multi-Discip
(10-250 141-93-01)		

NGL 07-002-002 **University of Connecticut** **1699**
Investigate methods of reducing sensitivity of sampled data systems to parameter variations and disturbances

Period	Obligations	
08/06/62-08/01/73	FY73:	TOTAL: \$315,890
Prin. Invest.	NASA Tech. Officer	CASE Category
Lindorff, D. P.	HQ-RE/Kurzahls, P. R.	41-Aero Engr
	LARC/Creedon, J. F.	
(10-750 125-00-00)	(10-750 125-19-04)	

NGR 07-002-058 **University of Connecticut** **1700**
Crystal chemistry of ionic conductors

Period	Obligations	
08/07/72-08/31/74	FY73: \$10,576	TOTAL: \$10,576
Prin. Invest.	NASA Tech. Officer	CASE Category
Wells, A. F.	LERC/Antoine, A. C.	12-Chemistry
(22-704 502-05-51)		

NAS 9-11025 **Wesleyan University** **1701**
Principal investigator support for laser-ranging retro-reflector experiment

Period	Obligations	
06/23/70-01/01/73	FY73:	TOTAL: \$92,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Faller, J. E.	JSC/Eichelman, W. F.	13-Physics
(72-910 914-40-00)		

NGR 07-006-004 **Wesleyan University** **1702**
Ultraviolet energy distribution of galaxies

Period	Obligations	
05/05/69-04/18/74	FY73:	TOTAL: \$14,375
Prin. Invest.	NASA Tech. Officer	CASE Category
Page, T.	HQ-SG/Ashworth, C. D.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 831-00-00)	(10-850 831-12-00)	

NGR 07-006-006 **Wesleyan University** **1703**
Far-UV (extra-atmospheric) observations of galaxies from a lunar observatory

Period	Obligations	
09/26/69-06/30/73	FY73:	TOTAL: \$32,550
Prin. Invest.	NASA Tech. Officer	CASE Category
Page, T.	JSC/Kondo, Y.	11-Astronomy
(72-910 914-40-00)		

NGR 07-006-008 **Wesleyan University** **1704**
Laser ranging ground station development

Period	Obligations	
03/23/70-06/30/73	FY73:	TOTAL: \$223,750
Prin. Invest.	NASA Tech. Officer	CASE Category
Faller, J. E.	HQ-SM/Strickland, A. T.	13-Physics
(10-810 195-00-00)	(10-810 195-43-50)	

NAS 5-23004 **Yale University** **1705**
Ae C, D, and E theoretical investigations

Period	Obligations	
09/28/71-09/22/76	FY73: \$40,000	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Walker, J. W.	GSFC/Findlay, J. A.	31-Atmos Sci
	GSFC/Grimes, D. W.	
(51-850 852-22-00)		

NAS 9-13058 **Yale University** **1706**
Catalysis study for space shuttle vehicle thermal protection system materials

Period	Obligations	
06/30/72-09/05/73	FY73: \$15,100	TOTAL: \$75,100
Prin. Invest.	NASA Tech. Officer	CASE Category
Rosner, D. E.	JSC/Scott, C. D.	43-Chem Engr
(72-980 908-42-39)		

NGL 07-004-005 **Yale University** **1707**
Low-power, low-speed data storage and processing equipment

Period	Obligations	
01/01/71-03/31/76	FY73: \$45,000	TOTAL: \$628,643
Prin. Invest.	NASA Tech. Officer	CASE Category
Barker, R. C.	GSFC/Schaefer, D. H.	45-Elec Engr
	GSFC/Strong, J. P., III	
(51-704 502-23-32)	(51-750 125-23-10)	(51-750 125-00-00)

NGL 07-004-043 **Yale University** **1708**
Chemical reactions in the electron-volt region

Period	Obligations	
10/26/65-09/01/74	FY73: \$18,400	TOTAL: \$331,910
Prin. Invest.	NASA Tech. Officer	CASE Category
Cross, R. J., Jr.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-84)		

NGR 07-004-103 **Yale University** **1709**
Definition and investigation of the feasibility of geochemical experiments

Period	Obligations	
09/23/69-08/01/74	FY73: \$25,000	TOTAL: \$211,574
Prin. Invest.	NASA Tech. Officer	CASE Category
Skinner, B. J.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-MA/Allenby, R. J.	
(10-810 383-09-53)		

NGR 07-004-009 **Yale University** **1710**
Determination & analysis of properties & characteristics of extremely small free living self-replicating cells

Period	Obligations	
11/01/61-10/31/73	FY73: \$20,000	TOTAL: \$248,708
Prin. Invest.	NASA Tech. Officer	CASE Category
Morowitz, H. J.	HQ-SL/Young, R. S.	51-Biology
(10-840 192-55-63)		

NASA'S UNIVERSITY PROGRAM CONNECTICUT (Continued)

NGR 07-004-010 **Yale University** **1711**
Studies of constitution of planetary interiors and mathematical techniques for planetary modeling

Period	Obligations	
11/16/62-09/30/73	FY73:	TOTAL: \$117,760
Prin. Invest.	NASA Tech. Officer	CASE Category
Carter, N. L.	HQ-SL/Burk, W. E.	32-Geological Sci
(10-840 185-00-00)		

NGR 07-004-029 **Yale University** **1712**
Theoretical research in stellar and planetary astrophysics

Period	Obligations	
12/10/64-09/30/72	FY73:	TOTAL: \$24,499
Prin. Invest.	NASA Tech. Officer	CASE Category
Wildt, R.	HQ-PY/Redding, E. R.	13-Physics
(10-370 183-00-00)		

NGR 07-004-034 **Yale University** **1713**
Study of relationship, through geologic time, of days per lunar month to growth increments in fossil and recent molluscan shells

Period	Obligations	
08/12/65-06/30/71	FY73:	TOTAL: \$117,000
Prin. Invest.	NASA Tech. Officer	CASE Category
McAlester, A. L.	HQ-SL/Young, R. S.	32-Geological Sci
MacClintock, C.		
Pannella, G.		
(10-870 189-00-00)		

NGR 07-004-035 **Yale University** **1714**
Investigation of the basic foundations of masers and lasers

Period	Obligations	
01/02/68-12/30/75	FY73: \$20,000	TOTAL: \$214,902
Prin. Invest.	NASA Tech. Officer	CASE Category
Lamb, W. E.	GSFC/Poltkin, H. H.	13-Physics
(51-740 129-00-00)	ARC/Billman, K. W.	
	(10-740 129-00-00)	

NGR 07-004-039 **Yale University** **1715**
Apollo lunar heat flow studies

Period	Obligations	
12/09/68-01/31/73	FY73:	TOTAL: \$32,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, S. P.	JSC/	32-Geological Sci
(72-960 942-92-00)		

NGR 07-004-109 **Yale University** **1716**
Ionospheric transport processes

Period	Obligations	
11/21/68-03/31/74	FY73: \$32,594	TOTAL: \$121,621
Prin. Invest.	NASA Tech. Officer	CASE Category
Walker, J. C.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Kavanagh, L. D.	
(10-850 188-36-56)	(10-850 188-39-52)	

NGR 07-004-134 **Yale University** **1717**
Lunar sample analysis

Period	Obligations	
01/27/71-02/01/73	FY73:	TOTAL: \$53,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Skinner, B. J.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 07-004-144 **Yale University** **1718**
Prediction of possible mineralogical and compositional variations on the Martian surface

Period	Obligations	
02/08/71-04/30/73	FY73:	TOTAL: \$22,069
Prin. Invest.	NASA Tech. Officer	CASE Category
Skinner, B. J.	HQ-SL/Allingham, J. W.	32-Geological Sci
Orville, P. M.	HQ-SL/Morris, E. C.	
(10-840 384-50-80)		

NGR 07-004-146 **Yale University** **1719**
Infection in closed ecological systems

Period	Obligations	
03/10/71-02/28/74	FY73: \$27,700	TOTAL: \$81,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Evans, A. S.	ARC/Mandel, A. D.	52-Clinical Med
(21-970 970-21-25)		

NGR 07-004-157 **Yale University** **1720**
Computative mineralogical composition of Martian surface

Period	Obligations	
07/10/72-05/01/73	FY73: \$28,500	TOTAL: \$28,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Skinner, B. J.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	
(10-840 384-50-80)		

DELAWARE

NGR 08-002-001 **Delaware State College** **1721**
Research on the specific heat of platinum

Period	Obligations	
09/25/69-03/31/73	FY73: \$9,876	TOTAL: \$24,767
Prin. Invest.	NASA Tech. Officer	CASE Category
Helmy, E. M.	HQ-PY/Pohly, J. G.	13-Physics
	GSFC/Predmore, R. E.	
(10-371 340-00-00)	(10-370 183-00-00)	

NGR 08-002-003 **Delaware State College** **1722**
Procedure used in measuring bacterial titers in urine samples by the luciferase assay for ATP

Period	Obligations	
01/13/72-11/14/73	FY73: \$22,942	TOTAL: \$34,892
Prin. Invest.	NASA Tech. Officer	CASE Category
Bush, V. N.	GSFC/Picciolo, G. L.	51-Biology
(10-371 340-00-00)		

NGR 08-002-005 **Delaware State College** **1723**
Research on the photo detachment cross section and threshold energy of negative ions in carbon dioxide

Period	Obligations	
03/16/73-04/30/74	FY73: \$22,105	TOTAL: \$22,105
Prin. Invest.	NASA Tech. Officer	CASE Category
Helmy, E. M.	HQ-PY/Pohly, J. G.	13-Physics
	GSFC/Aikin, A. C.	
(10-371 340-00-00)		

NASA'S UNIVERSITY PROGRAM **DELAWARE (Continued)**

NAS 1-12304 **University of Delaware** **1724**
Skylab earth resources experiment package application to
ecological geological and oceanographic investigation of Delaware
Bay

Period	Obligations	
06/05/73-08/19/74	FY73: \$35,000	TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klemas, V.	LARC/Johnson, R. W.	39-Env Sci, NEC
Jordan, R. R.	LARC/Whitman, R. I.	
Kinsman, B.		
(23-960 948-63-85)		

NAS 5-21784 **University of Delaware** **1725**
ERTS-A data user investigation of dynamics of plankton
populations in upwelling areas

Period	Obligations	
06/13/72-07/01/74	FY73: \$35,982	TOTAL: \$50,982
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Szekielda, K. H.	GSFC/Fihelly, A. W.	33-Oceanography
(51-680 641-14-00)	(51-680 641-14-05)	

NAS 5-21837 **University of Delaware** **1726**
ERTS-A data user investigation of the applications of ecological,
geological and oceanographic ERTS-A imagery of Delaware
coastal resources planning

Period	Obligations	
08/16/72-12/01/74	FY73: \$28,000	TOTAL: \$28,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Klemas, V.	GSFC/Fihelly, A. W.	39-Env Sci, NEC
Jordan, R. R.		
Goodman, J. M.		
(51-680 641-14-07)		

NAS 9-13344 **University of Delaware** **1727**
Dynamics of plankton populations in upwelling areas - Skylab
investigation

Period	Obligations	
03/19/73-06/30/74	FY73: \$61,800	TOTAL: \$61,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Szekielda, K.	JSC/Byrns, Z.	33-Oceanography
(72-960 948-63-84)		

NGR 08-001-016 **University of Delaware** **1728**
A non-linear integral equation of the Abel type arising from the
theory of adsorption kinetics

Period	Obligations	
04/20/67-12/31/72	FY73:	TOTAL: \$24,902
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pellicciaro, E. J.	HQ-RA/	21-Mathematics
(10-740 129-00-00)		

NGR 08-001-029 **University of Delaware** **1729**
Lunar sample analysis

Period	Obligations	
02/22/71-01/31/74	FY73: \$9,460	TOTAL: \$31,960
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Glass, B. P.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGT 08-001-002 **University of Delaware** **1730**
Training of graduate students in space-related science and
technology

Period	Obligations	
03/29/63-08/01/72	FY73:	TOTAL: \$577,827
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kilpatrick, F. P.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

DISTRICT OF COLUMBIA

NAS 5-21892 **The American University** **1731**
ERTS-A data user investigation of ERTS information system
development for Potomac River basin natural resources manage-
ment

Period	Obligations	
11/03/72-01/01/74	FY73: \$62,926	TOTAL: \$62,926
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
MacLeod, N. H.	GSFC/Fihelly, A. W.	39-Env Sci, NEC
(51-680 641-14-08)		

NASR 229 **The American University** **1732**
Review of national potential for machine intelligence research

Period	Obligations	
07/01/66-07/01/77	FY73:	TOTAL: \$5,960
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	HQ-RE/	21-Mathematics
(10-750 125-00-00)		

NGR 09-003-014 **The American University** **1733**
Studies of magnetic semiconductors

Period	Obligations	
03/28/69-03/31/73	FY73:	TOTAL: \$115,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cullen, E.	LARC/Long, E. R., Jr.	45-Elec Engr
(10-740 129-00-00)	(25-740 129-00-00)	(10-740 129-03-43)

NGR 09-003-015 **The American University** **1734**
Study of emotion and non-metabolic reinforcers in a multi-animal
environment

Period	Obligations	
07/15/69-12/31/72	FY73:	TOTAL: \$60,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ferster, C. B.	HQ-MM/Belleville, R. E.	61-Biol Aspects
(10-870 189-52-61)	(10-870 189-00-00)	

NGL 09-005-067 **Catholic University** **1735**
Study of pulsatile blood flow under both normal and adverse
environmental conditions

Period	Obligations	
04/01/69-03/01/73	FY73:	TOTAL: \$43,795
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ling, S. C.	HQ-RA/Gessow, A.	41-Aero Engr
	HQ-RA/Roudebush, W. H.	
(10-740 129-00-00)		

**NASA'S UNIVERSITY PROGRAM
DISTRICT OF COLUMBIA (Continued)**

NGR 09-005-022 Catholic University 1736
Genetic studies of hydrogen bacteria & their application to biological life support systems

Period	Obligations
05/04/65-04/01/76	FY73: TOTAL: \$163,791
Prin. Invest.	NASA Tech. Officer
Decicco, B. T.	HQ-MM/Saunders, J. F.
	HQ-MM/Coburn, K. R.
(10-870 189-00-00)	(21-870 189-54-62) (10-870 189-54-62)

NGR 09-005-063 Catholic University 1737
Interaction of the solar wind with the moon

Period	Obligations
04/15/69-05/31/74	FY73: \$25,000 TOTAL: \$104,000
Prin. Invest.	NASA Tech. Officer
Whang, Y. C.	HQ-SG/Kavanagh, L. D.
	HQ-SG/Schmerling, E. R.
(10-850 385-36-00)	(10-850 385-00-00)

NGR 09-005-072 Catholic University 1738
Theoretical investigation of mechanism of coloring in amorphous high band gap materials in a reduced environmental pressure and under UV irradiation

Period	Obligations
12/01/69-10/01/71	FY73: TOTAL: \$46,779
Prin. Invest.	NASA Tech. Officer
Tomoyasu, T.	GSFC/Schutt, J. B.
	GSFC/Schach, M.
(51-742 124-00-00)	(51-742 124-09-26)

NGR 09-005-076 Catholic University 1739
Experimental study on weak turbulence

Period	Obligations
11/20/69-12/31/73	FY73: TOTAL: \$11,984
Prin. Invest.	NASA Tech. Officer
Ling, S. C.	LERC/Deissler, R. G.
(22-740 129-00-00)	13-Physics

NGR 09-005-077 Catholic University 1740
Detector development for the study of high energy cosmic rays

Period	Obligations
09/01/71-08/31/73	FY73: \$53,700 TOTAL: \$100,673
Prin. Invest.	NASA Tech. Officer
Crannel, H.	GSFC/Fichtel, C. E.
	GSFC/Kniffen, D. A.
(51-850 188-46-54)	(51-850 188-46-51) (51-850 832-12-00)

NGR 09-005-098 Catholic University 1741
Effects of mutation & environment on selected bacteria

Period	Obligations
10/25/72-09/30/73	FY73: \$20,300 TOTAL: \$20,300
Prin. Invest.	NASA Tech. Officer
Decicco, B. T.	ARC/MacElroy, R. D.
(21-970 970-21-62)	51-Biology

NGR 09-005-099 Catholic University 1742
Experimental study of the structure of turbulence with intermediate range of Reynolds number

Period	Obligations
09/19/72-10/01/73	FY73: \$15,640 TOTAL: \$15,640
Prin. Invest.	NASA Tech. Officer
Ling, S. C.	LERC/Deissler, R. G.
(22-704 502-04-25)	41-Aero Engr

NGT 09-005-093 Catholic University 1743
A summer faculty fellowship program in research

Period	Obligations
12/08/71-03/31/74	FY73: \$106,358 TOTAL: \$211,173
Prin. Invest.	NASA Tech. Officer
Fang, B. T.	HQ-PY/Carter, C. H.
(10-371 340-00-00)	49-Engr, NEC

NGR 09-050-001 Federal City College 1744
Study of detectors for extremely relativistic particles

Period	Obligations
10/07/69-12/31/73	FY73: \$49,250 TOTAL: \$167,183
Prin. Invest.	NASA Tech. Officer
Whiteside, H.	GSFC/McDonald, F. B.
	GSFC/Ormes, J. F.
(51-850 188-46-52)	(51-850 832-12-00) (10-371 340-00-00)

NGR 09-050-003 Federal City College 1745
Fundamental and analytical investigations of mechanisms and phenomena related to spacecraft electrochemical devices

Period	Obligations
10/07/69-04/30/73	FY73: \$18,262 TOTAL: \$80,349
Prin. Invest.	NASA Tech. Officer
Nottingham, W. C.	GSFC/Halpert, G.
	GSFC/Hennigan, T. J.
(10-371 340-00-00)	(51-704 502-25-58) (10-370 183-00-00)

NGR 09-050-007 Federal City College 1746
Lunar pyroxene cooling history of the returned lunar minerals

Period	Obligations
06/01/71-05/01/72	FY73: TOTAL: \$5,395
Prin. Invest.	NASA Tech. Officer
Ng, G.	GSFC/Mundy, J. R.
(51-910 914-40-00)	12-Chemistry

NGR 09-050-010 Federal City College 1747
Laboratory investigation of different interstellar bands based on the spectra of tetrabenzoporphin

Period	Obligations
01/25/72-02/28/73	FY73: TOTAL: \$18,000
Prin. Invest.	NASA Tech. Officer
McDowell, H.	HQ-PY/Pohly, J. G.
	HQ-SG/Roman, N. G.
(10-850 188-41-57)	(10-371 340-00-00)

NGR 09-050-013 Federal City College 1748
Applications of medical information management systems

Period	Obligations
08/01/72-07/01/73	FY73: \$4,914 TOTAL: \$4,914
Prin. Invest.	NASA Tech. Officer
Schwarz, R. A.	GSFC/Alterescu, S.
	GSFC/Friedman, D. S.
(51-620 402-07-01)	21-Mathematics

NAS 5-11191 George Washington University 1749
Study and assembly of OSO-III grating spectrometer data

Period	Obligations
06/11/69-11/01/79	FY73: \$1,482 TOTAL: \$17,225
Prin. Invest.	NASA Tech. Officer
	GSFC/
(51-850 385-38-00)	13-Physics

**NASA'S UNIVERSITY PROGRAM
DISTRICT OF COLUMBIA (Continued)**

NASW 2055 George Washington University 1750
To enhance the transfer of aerospace technology to problem areas
in biomedicine and the public sector

Period	Obligations
05/20/70-08/31/72	FY73: TOTAL: \$413,558
Prin. Invest.	NASA Tech. Officer CASE Category
Cantor, H.	HQ-KT/ 75-Political Sci
(10-250 141-93-00)	(10-250 141-00-00) (10-250 141-91-00)

NASW 2444 George Washington University 1751
Enhancement of aerospace technology transfer to problem areas
in biomedicine and the public sector

Period	Obligations
03/09/73-08/31/73	FY73: \$175,000 TOTAL: \$175,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wright, P.	HQ-KT/Hamilton, J. T. 99-Multi-Discip
	HQ-KT/Ault, L. A.
(10-250 141-93-02)	(10-250 141-94-00) (10-250 141-91-00)

NGL 09-010-008 George Washington University 1752
Synthesis and spectroscopic properties of rare earth chelates in
solvents and polymers for optical masers

Period	Obligations
05/13/64-06/01/72	FY73: TOTAL: \$216,034
Prin. Invest.	NASA Tech. Officer CASE Category
Filipseu, N.	GSFC/McAvoy, N. 12-Chemistry
	GSFC/Plotkin, H. H.
(51-750 125-00-00)	(51-750 125-22-08)

NGL 09-010-030 George Washington University 1753
Multidisciplinary program of policy studies in science and
technology

Period	Obligations
09/09/66-08/01/74	FY73: TOTAL: \$1,737,628
Prin. Invest.	NASA Tech. Officer CASE Category
Mayo, A. L.	HQ-PY/Redding, E. R. 79-Soc Sci, NEC
(10-370 183-00-00)	(10-250 143-00-00) (10-705 130-06-21)

NGL 09-010-053 George Washington University 1754
Research in space-related areas in engineering and applied
science

Period	Obligations
12/18/68-06/01/74	FY73: \$150,000 TOTAL: \$750,000
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Martin, D. J. 47-Materials Engr
	LARC/Royall, J. F.
(23-701 599-85-00)	(23-760 126-00-00) (23-742 124-00-00)

NGR 09-010-058 George Washington University 1755
Study of structural reliability evaluation and demonstration of
aerospace vehicles

Period	Obligations
04/07/70-08/01/71	FY73: TOTAL: \$42,783
Prin. Invest.	NASA Tech. Officer CASE Category
Freudenthal, A. M.	LARC/Leybold, H. A. 41-Aero Engr
	LARC/Phillips, E. P.
(23-760 126-00-00)	

NGR 09-010-064 George Washington University 1756
George Washington University research in acoustics at the NASA
Langley Research Center

Period	Obligations
02/04/70-01/31/74	FY73: \$201,400 TOTAL: \$599,548
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Shearin, J. G. 41-Aero Engr
	LARC/Hubbard, H. H.
(23-704 501-04-01)	(23-762 132-80-01)

NGR 09-010-074 George Washington University 1757
Joint graduate program in aeronautics at the NASA Langley
Research Center

Period	Obligations
04/06/71-04/30/74	FY73: \$135,000 TOTAL: \$400,300
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Mulac, R. W. 41-Aero Engr
(23-704 501-15-82)	(10-371 340-00-00)

NGR 09-010-078 George Washington University 1758
Joint graduate program in computer-aided structural design

Period	Obligations
01/06/72-01/31/74	FY73: \$90,000 TOTAL: \$217,000
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Fulton, R. E. 41-Aero Engr
	LARC/Stephens, W. B.
(23-704 501-22-01)	(23-742 124-08-30)

NGR 09-010-080 George Washington University 1759
Lunar sample analysis

Period	Obligations
06/21/72-01/31/73	FY73: TOTAL: \$33,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wasilewski, P.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NGR 09-010-085 George Washington University 1760
Aircraft noise reduction research

Period	Obligations
02/21/73-08/31/74	FY73: \$150,000 TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer CASE Category
Liebowitz, H.	LARC/Hubbard, H. H. 41-Aero Engr
(23-704 501-04-01)	(23-704 501-09-02) (23-704 501-29-11)

NGR 09-010-090 George Washington University 1761
International ultraviolet Explorer attitude control research

Period	Obligations
02/01/73-01/31/74	FY73: \$26,200 TOTAL: \$26,200
Prin. Invest.	NASA Tech. Officer CASE Category
Kahn, W. K.	GSFC/Moore, J. V. 49-Engr, NEC
(51-850 878-21-00)	

NSR 09-010-019 George Washington University 1762
Series of lectures on exploration of space at NASA installations

Period	Obligations
06/01/65-07/01/76	FY73: TOTAL: \$1,500
Prin. Invest.	NASA Tech. Officer CASE Category
Rothrock, A. M.	HQ-PA/ 99-Multi-Discip
(10-030 010-00-00)	

NASA'S UNIVERSITY PROGRAM
DISTRICT OF COLUMBIA (Continued)

NSR 09-010-021 **George Washington University** **1763**
 Series of lectures on exploration of space
Period *Obligations*
 09/01/65-09/01/76 FY73: TOTAL: \$4,500
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Rothrock, A. M. HQ-PA/ 99-Multi-Discip
 (10-030 010-00-00)

NSR 09-010-027 **George Washington University** **1764**
 Scientific communication research in space biology
Period *Obligations*
 05/24/66-12/31/73 FY73: \$382,422 TOTAL: \$2,115,538
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Schiff, H. I. LERC/Baker, C. E. 59-Life Sci, NEC
 Ridley, B. HQ-MM/Brownstein, H. S. (10-870 189-00-00)
 (10-840 193-58-63) (10-970 970-14-01)

NAS 8-29778 **Georgetown University** **1765**
 Differential electrophoretic separation of cells and its effect on cell viability
Period *Obligations*
 05/01/73-02/28/74 FY73: \$50,000 TOTAL: \$50,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Leise, E. M. MSFC/Krupnick, A. C. 51-Biology
 MSFC/Allen, R. E.
 (62-980 975-90-95)

NGR 09-009-024 **Georgetown University** **1766**
 Study of multiple molecular forms of enzyme of leucocytes in infection, disease and stress
Period *Obligations*
 07/01/68-09/14/73 FY73: \$38,000 TOTAL: \$135,010
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gray, I. ARC/Mandel, A. D. 52-Clinical Med
 (21-970 970-21-25)

NGL 09-011-006 **Howard University** **1767**
 Optical, magnetic and electrical properties of tektites, meteorites and other space related materials
Period *Obligations*
 01/04/66-08/01/73 FY73: TOTAL: \$168,031
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Thorpe, A. N. GSFC/Okeefe, J. A. 13-Physics
 (51-810 195-00-00) (51-840 185-00-00) (51-810 195-42-63)

NGL 09-011-017 **Howard University** **1768**
 Study of neurohumoral control systems operations in adjustment of ventricular performance
Period *Obligations*
 04/25/68-01/14/74 FY73: \$85,000 TOTAL: \$582,398
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Hawthorne, E. W. ARC/Sandler, H. 53-Other Medical
 (21-970 970-21-12) (21-770 127-00-00) (21-770 708-40-01)

NGL 09-011-046 **Howard University** **1769**
 Investigation of radiation detectors for environmental trace elements
Period *Obligations*
 04/25/72-07/01/75 FY73: TOTAL: \$33,131
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Ferguson, G. A. HQ-PY/Pohly, J. G. 39-Env Sci, NEC
 (10-371 340-00-00)

NGR 09-011-004 **Howard University** **1770**
 Research in space sciences
Period *Obligations*
 06/24/65-02/28/74 FY73: \$30,359 TOTAL: \$291,775
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Thorpe, A. N. GSFC/Mentall, J. E. 13-Physics
 (51-840 185-47-55) (51-850 877-12-00) (10-370 183-00-00)

NGR 09-011-022 **Howard University** **1771**
 Low energy activation analysis of geochemical exploration
Period *Obligations*
 09/18/69-07/31/72 FY73: TOTAL: \$27,790
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Ferguson, G. A. GSFC/Trombka, J. I. 19-Phys Sci, NEC
 GSFC/Schmadeback, R.
 (10-371 340-00-00) (51-810 195-00-00) (10-370 183-00-00)

NGR 09-011-039 **Howard University** **1772**
 Motion and stability of dual-spin satellite
Period *Obligations*
 12/29/71-02/28/73 FY73: TOTAL: \$13,389
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Bainum, P. M. GSFC/Fedor, J. V. 41-Aero Engr
 HQ-PY/Pohly, J. G.
 (10-371 340-00-00) (51-620 164-76-51)

NGR 09-011-052 **Howard University** **1773**
 Isophotometry of comets
Period *Obligations*
 05/30/73-06/14/74 FY73: \$15,800 TOTAL: \$15,800
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Kumar, C. K. GSFC/Jackson, W. M. 11-Astronomy
 GSFC/Donn, B.
 (10-371 340-00-00)

NGR 09-011-053 **Howard University** **1774**
 Three-dimensional motion and stability of rotating space station-cable-counter-weight configuration
Period *Obligations*
 05/09/73-06/15/74 FY73: \$14,961 TOTAL: \$14,961
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Bainum, P. M. HQ-PY/Pohly, J. G. 41-Aero Engr
 HQ-PY/Huff, V. N.
 (10-371 340-00-00)

NGT 09-011-001 **Howard University** **1775**
 Training of predoctoral graduate students in space related sciences and technology
Period *Obligations*
 03/18/64-08/01/72 FY73: TOTAL: \$329,913
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Miller, C. L. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NGT 09-011-051 **Howard University** **1776**
 Undergraduate research participation program for 10 students
Period *Obligations*
 01/01/73-03/31/74 FY73: \$34,983 TOTAL: \$34,983
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Deloatch, E. M. HQ-PY/Chen, W. T. 59-Life Sci, NEC
 (10-371 340-00-00)

NASA'S UNIVERSITY PROGRAM

FLORIDA

NGR 10-022-001	Bethune-Cookman College	1777			
			A study of lagoonal and estuarine processes through the beneficial disposal of solid waste		
			<i>Period</i>	<i>Obligations</i>	
			07/26/72-08/01/73	FY73: \$19,884	TOTAL: \$19,884
	Poonai, P.	39-Env Sci, NEC	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				HQ-PY/Pohly, J. G.	
				KSC/Norman, R. L.	
			(10-980 908-94-24)	(10-371 340-00-00)	
NGR 10-015-008	Florida Institute of Technology	1778			
			Study of lagoonal and estuarine ecological processes		
			<i>Period</i>	<i>Obligations</i>	
			04/11/72-06/30/73	FY73: \$65,000	TOTAL: \$99,930
	Nevin, T. A.	39-Env Sci, NEC	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				KSC/Lee, W. H.	
				KSC/Gayle, J. B.	
			(76-980 909-64-47)		
NAS 1-9693	Florida State University	1779			
			Participation in the science planning for the Viking 1975 missions in the area of meteorology		
			<i>Period</i>	<i>Obligations</i>	
			03/23/70-03/31/77	FY73: \$96,617	TOTAL: \$170,961
	Hess, S. K.	31-Atmos Sci	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				LARC/Soffen, G. A.	
			(23-840 815-20-00)		
NGR 10-004-018	Florida State University	1780			
			Photochemical transformation of acetate into algae cell material		
			<i>Period</i>	<i>Obligations</i>	
			11/24/64-08/31/72	FY73: \$10,000	TOTAL: \$215,580
	Gaffron, H.	51-Biology	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				HQ-SL/Young, R. S.	
			(10-840 192-55-64)		
NGR 10-004-041	Florida State University	1781			
			Microbial activity in non-aqueous systems		
			<i>Period</i>	<i>Obligations</i>	
			07/17/72-09/14/73	FY73: \$26,000	TOTAL: \$135,700
	Larock, P. A.	51-Biology	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				HQ-SL/Young, R. S.	
			(10-840 192-55-64)		
NGR 10-004-056	Florida State University	1782			
			Infrared absorption from 0.8 to 1.5 microns of NH ₃ , CH ₄ and CO ₂		
			<i>Period</i>	<i>Obligations</i>	
			03/25/69-01/31/74	FY73: \$26,938	TOTAL: \$160,776
	Hunt, R. H.	11-Astronomy	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				HQ-SL/Brunk, W. E.	
				HQ-SL/Fellows, R. F.	
			(10-840 196-41-84)	(10-840 185-00-00)	
NGR 10-004-071	Florida State University	1783			
			Research relating to isolation and confinement		
			<i>Period</i>	<i>Obligations</i>	
			04/19/72-07/03/73	FY73:	TOTAL: \$37,000
	Haythorn, W. W.	51-Biology	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				JSC/Fedderson, W. E.	
			(72-910 914-51-00)		
NGT 10-004-008	Florida State University	1784			
			Training of graduate students in space-related science and technology		
			<i>Period</i>	<i>Obligations</i>	
			03/21/63-08/01/72	FY73:	TOTAL: \$648,662
	Keirs, R. J.	99-Multi-Discip	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				HQ-PY/Carter, C. H.	
			(10-370 181-00-00)		
NGR 10-019-004	Florida Technological University	1785			
			Study of a diverse coastal ecosystem on the Atlantic coast of Florida		
			<i>Period</i>	<i>Obligations</i>	
			04/11/72-09/01/73	FY73: \$65,000	TOTAL: \$85,000
	Miller, H. A.	39-Env Sci, NEC	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				KSC/Lee, W. H.	
				KSC/Gayle, J. B.	
			(76-980 909-64-47)		
NGR 10-019-009	Florida Technological University	1786			
			Solid rocket exhaust effects on ecology and environment		
			<i>Period</i>	<i>Obligations</i>	
			02/03/73-02/03/74	FY73: \$67,660	TOTAL: \$67,660
	Nimmo, B. G.	39-Env Sci, NEC	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				KSC/Lee, W. H.	
				KSC/Gayle, J. B., Jr.	
			(76-980 909-62-47)		
NAS 1-5722	University of Florida	1787			
			Development and delivery of a fast shutter		
			<i>Period</i>	<i>Obligations</i>	
			11/01/65-11/01/76	FY73:	TOTAL: \$9,864
		49-Engr, NEC	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				LARC/	
			(23-740 129-00-00)		
NAS 8-1523	University of Florida	1788			
			Study of age deterioration of gasket materials installed in simulated launch vehicle hardware		
			<i>Period</i>	<i>Obligations</i>	
			02/01/66-02/01/77	FY73:	TOTAL: \$5,363
		42-Astro Engr	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				MSFC/	
			(62-910 931-9X-00)	(62-740 129-00-00)	(62-910 933-9X-00)
NAS 8-20247	University of Florida	1789			
			Study of age deterioration of gasket materials installed in simulated launch vehicle hardware		
			<i>Period</i>	<i>Obligations</i>	
			06/28/65-06/30/76	FY73:	TOTAL: \$29,408
	Patterson, E. P.	12-Chemistry	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
				MSFC/Schell, J. T.	
			(62-910 933-50-00)	(62-910 933-31-00)	

NASA'S UNIVERSITY PROGRAM FLORIDA (Continued)

NAS 8-26832 **University of Florida** **1790**
Computer analysis and design of sample data autopilots
Period *Obligations*
06/22/71-06/01/72 FY73: TOTAL: \$35,000
Prin. Invest. NASA Tech. Officer CASE Category
MSFC/ 41-Aero Engr
(62-980 908-52-08)

NAS 9-11436 **University of Florida** **1791**
Southern Hemisphere celestial atlas
Period *Obligations*
11/24/70-09/15/72 FY73: TOTAL: \$15,700
Prin. Invest. NASA Tech. Officer CASE Category
JSC/Kondo, Y. 11-Astronomy
(72-910 914-14-00)

NAS10-1255 **University of Florida** **1792**
Feasibility study on explosive effects of liquid propellants
Period *Obligations*
04/22/64-06/30/73 FY73: \$21,978 TOTAL: \$634,619
Prin. Invest. NASA Tech. Officer CASE Category
Farber, E. A. KSC/Deese, J. H. 49-Engr, NEC
KSC/Atkins, J. R.
(76-980 909-64-09) (76-980 908-62-09)

NAS10-7791 **University of Florida** **1793**
Services & material to research & write a narrative history of the JFK's Space Center Apollo launch facilities & operations
Period *Obligations*
10/15/71-10/01/73 FY73: \$49,589 TOTAL: \$99,189
Prin. Invest. NASA Tech. Officer CASE Category
Lomask, M. KSC/Russo, J. F. 73-History
Benson, C. D. KSC/Hawkins, G. M.
(76-950 953-36-00)

NAS10-8051 **University of Florida** **1794**
Study-space shuttle thermal protection system condition
Period *Obligations*
06/29/72-08/01/73 FY73: TOTAL: \$74,400
Prin. Invest. NASA Tech. Officer CASE Category
Farber, E. A. KSC/Jorolan, A. E. 49-Engr, NEC
Hsieh, C. K.
Yang, C. K.
(76-980 908-62-32)

NGL 10-005-005 **University of Florida** **1795**
Multidisciplinary program of research in space-related sciences and technology
Period *Obligations*
11/01/63-06/01/72 FY73: TOTAL: \$1,800,000
Prin. Invest. NASA Tech. Officer CASE Category
Grinter, L. E. HQ-PY/Redding, E. R. 99-Multi-Discip
(10-370 183-00-00)

NGL 10-005-008 **University of Florida** **1796**
Theoretical atmospheric physics
Period *Obligations*
06/04/64-04/30/76 FY73: \$50,000 TOTAL: \$414,460
Prin. Invest. NASA Tech. Officer CASE Category
Green, A. S. HQ-SL/Fellows, R. F. 31-Atmos Sci
HQ-SL/Brunk, W. E.
(10-840 185-00-00) (10-840 185-47-81) (10-850 188-00-00)

NGL 10-005-022 **University of Florida** **1797**
Gas solubilities and transport properties in fuel cell electrolytes
Period *Obligations*
02/14/66-08/01/72 FY73: \$33,404 TOTAL: \$230,615
Prin. Invest. NASA Tech. Officer CASE Category
Walker, R. D., Jr. LERC/Easter, R. W. 43-Chem Engr
(22-704 502-25-53)

NGL 10-005-039 **University of Florida** **1798**
Investigation of structures with the field ion microscope
Period *Obligations*
03/14/66-02/01/75 FY73: TOTAL: \$221,259
Prin. Invest. NASA Tech. Officer CASE Category
Hren, J. J. LERC/Lad, R. A. 47-Materials Engr
LERC/Grimes, H. H.
(10-740 129-00-00) (22-740 114-03-02) (22-740 129-00-00)

NGL 10-005-049 **University of Florida** **1799**
Investigation of spectra in the vacuum UV and soft X-ray region
Period *Obligations*
03/24/66-02/28/74 FY73: TOTAL: \$123,900
Prin. Invest. NASA Tech. Officer CASE Category
Schneider, R. T. HQ-SG/Oertel, G. K. 49-Engr, NEC
Campbell, H. D. LERC/Fordyce, J. S.
(10-850 188-00-00) (23-740 129-00-00)

NGL 10-005-080 **University of Florida** **1800**
Electrotransport in thin films
Period *Obligations*
03/22/68-04/01/75 FY73: TOTAL: \$143,273
Prin. Invest. NASA Tech. Officer CASE Category
Hummel, R. E. LERC/Lad, R. A. 47-Materials Engr
Guy, A. G.
(10-740 129-00-00) (22-740 129-03-42) (22-740 114-03-02)

NGL 10-005-089 **University of Florida** **1801**
Experimental investigation of a uranium plasma
Period *Obligations*
01/30/68-12/01/78 FY73: \$80,000 TOTAL: \$486,795
Prin. Invest. NASA Tech. Officer CASE Category
Schneider, R. T. HQ-NS/Thom, K. 13-Physics
LARC/Hohl, F.
(10-704 503-10-03) (10-720 112-02-22) (45-720 112-02-22)

NGL 10-005-127 **University of Florida** **1802**
Experimental investigation of round turbulent jet exhausting into a subsonic cross flow
Period *Obligations*
12/16/69-10/01/74 FY73: \$20,180 TOTAL: \$118,077
Prin. Invest. NASA Tech. Officer CASE Category
Fearn, R. L. LARC/Margason, R. J. 41-Aero Engr
LARC/Shaw, C. S.
(23-702 760-62-01) (23-760 721-56-11) (23-760 721-00-00)

NGR 10-005-057 **University of Florida** **1803**
Studies of electroencephalographic patterns
Period *Obligations*
05/23/68-12/31/73 FY73: \$71,250 TOTAL: \$279,470
Prin. Invest. NASA Tech. Officer CASE Category
Webb, W. B. ARC/Anliker, J. E. 69-Psych, NEC
(21-970 970-21-52)

**NASA'S UNIVERSITY PROGRAM
FLORIDA (Continued)**

NGR 10-005-169 **University of Florida** **1804**
Lightning studies
Period *Obligations*
01/15/73-01/14/74 FY73: \$9,414 TOTAL: \$9,414
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Uman, M. A. KSC/Toft, P. D. 31-Atmos Sci
Chenette, E. R. KSC/Carraway, A. J.
(76-980 908-67-05)

NGR 10-005-176 **University of Florida** **1805**
Analysis of Jupiter data from the RAE-I satellite
Period *Obligations*
06/27/73-06/30/74 FY73: \$16,414 TOTAL: \$16,414
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Carr, T. D. HQ-SG/Hallenbeck, D. R. 11-Astronomy
HQ-SG/Roman, N. G.
(10-850 385-41-00)

NGR 10-005-182 **University of Florida** **1806**
Fundamental studies on electrolyte matrix processing
Period *Obligations*
06/26/73-08/31/74 FY73: \$33,726 TOTAL: \$33,726
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Walker, R. D. LERC/Soltis, D. G. 42-Astro Engr
(22-704 502-25-53)

NGL 10-007-010 **University of Miami** **1807**
Multidisciplinary research in space sciences
Period *Obligations*
02/28/66-10/01/73 FY73: TOTAL: \$1,100,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Man, E. H. HQ-PY/Redding, E. R. 99-Multi-Discip
HQ-PY/Quinn, H. B.
(10-370 183-00-00)

NGR 10-007-008 **University of Miami** **1808**
Research in the Institute of Molecular Evolution in the school
of Environmental and Planetary Sciences
Period *Obligations*
06/09/64-09/30/72 FY73: \$160,000 TOTAL: \$1,742,040
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fox, S. W. HQ-SL/Young, R. S. 12-Chemistry
(10-840 192-55-61)

NGR 10-007-052 **University of Miami** **1809**
Study of optical activity in the context of prebiological chem-
istry
Period *Obligations*
02/27/68-09/30/73 FY73: \$25,000 TOTAL: \$146,040
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harada, K. HQ-SL/Young, R. S. 12-Chemistry
(10-840 192-55-61)

NGR 10-007-054 **University of Miami** **1810**
Comparative studies of the organic and inorganic chemistry,
mineralogy and petrology of the earths crust, the meteorites, and
lunar rocks
Period *Obligations*
02/27/68-09/30/72 FY73: TOTAL: \$51,101
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Muller, G. HQ-SL/Young, R. S. 32-Geological Sci
(10-870 189-00-00) (10-840 192-55-62) (10-870 189-55-62)

NGR 10-007-070 **University of Miami** **1811**
Analytical accounting of the process of organizing and adminis-
tering NASA, 1961-1971, and the implications for US national
interests and purposes
Period *Obligations*
09/13/68-11/30/73 FY73: TOTAL: \$150,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harvey, M. L. HQ-PY/Morris, J. D. 76-Sociology
(10-370 183-00-00)

NGR 10-007-088 **University of Miami** **1812**
Lunar sample analysis
Period *Obligations*
02/17/71-01/31/74 FY73: \$35,000 TOTAL: \$136,300
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fox, S. W. JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)

NGR 10-007-089 **University of Miami** **1813**
Research studies basic to the US purpose of promoting interna-
tional cooperation in space
Period *Obligations*
09/17/70-08/01/73 FY73: TOTAL: \$118,089
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harvey, M. L. HQ-I/Frutkin, A. W. 75-Political Sci
HQ-PY/Morris, J. D.
(10-370 183-00-00)

NGR 10-007-097 **University of Miami** **1814**
Water immersion study
Period *Obligations*
06/08/72-07/01/74 FY73: \$20,000 TOTAL: \$45,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Epstein, M. JSC/Leach, C. S. 52-Clinical Med
(72-970 970-51-16) (72-910 914-51-00)

NGT 10-007-077 **University of Miami** **1815**
Predoctoral training of students in areas of science, technology
& space, in international affairs
Period *Obligations*
04/21/69-08/01/72 FY73: TOTAL: \$53,100
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harvey, M. L. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NSR 10-007-087 **University of Miami** **1816**
Annotated survey and analysis of documentary and analytical
materials relating to technology transfer
Period *Obligations*
07/07/70-05/01/72 FY73: TOTAL: \$48,600
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harvey, M. L. HQ-KT/Carlson, J. M. 99-Multi-Discip
HQ-KT/Philips, R. J.
(10-250 141-00-00)

NAS10-2948 **University of South Florida** **1817**
Educational symposium
Period *Obligations*
10/01/65-01/01/76 FY73: TOTAL: \$9,661
Prin. Invest. *NASA Tech. Officer* *CASE Category*
HQ-FE/ 99-Multi-Discip
(10-030 010-00-00)

NASA'S UNIVERSITY PROGRAM FLORIDA (Continued)

NGR 10-008-028 **University of South Florida** **1818**
Elastic plate spallation
Period *Obligations*
03/18/71-09/15/72 FY73: TOTAL: \$18,978
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Oline, L. W. LARC/Hayduk, R. J. 49-Engr, NEC
LARC/Thomson, R. G.
(23-742 124-09-30)

NAS 9-11872 **University of West Florida** **1819**
Remote sensor data
Period *Obligations*
06/30/71-09/10/72 FY73: TOTAL: \$38,300
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Edmisten, J. A. JSC/Fuller, C. E. 53-Other Medical
JSC/Barnes, C. M.
(72-680 160-75-75)

GEORGIA

NGL 11-001-009 **Emory University** **1820**
Study of cardiovascular adaptation during long-term weightlessness
Period *Obligations*
05/12/65-04/30/76 FY73: \$29,000 TOTAL: \$472,179
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Popovic, V. P. WS/Holton, E. M. 51-Biology
(53-970 970-71-61) (10-870 189-00-00) (53-870 189-54-62)

NGR 11-001-012 **Emory University** **1821**
Effects of gravitational stimuli on sleep and vestibular function
Period *Obligations*
06/01/65-12/01/75 FY73: TOTAL: \$566,038
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Perachio, H. A. ARC/Winter, D. L. 61-Biol Aspects
(10-870 189-00-00) (10-870 189-52-62) (21-870 189-52-61)

NGR 11-001-016 **Emory University** **1822**
Histopathological & histochemical study of subhuman primates
Period *Obligations*
02/00/32-02/28/74 FY73: \$70,000 TOTAL: \$555,812
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bourne, G. H. ARC/Winter, D. L. 51-Biology
(21-970 970-21-61)

NGR 11-001-045 **Emory University** **1823**
Vestibular influence on sleep in non-human primates
Period *Obligations*
10/07/71-10/01/73 FY73: \$57,004 TOTAL: \$115,488
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Perachio, A. A. ARC/Anliker, J. E. 51-Biology
(21-970 970-21-53)

NGT 11-001-005 **Emory University** **1824**
Training of predoctoral graduate students in space related sciences & technology
Period *Obligations*
03/12/64-08/01/72 FY73: TOTAL: \$197,116
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lester, C. T. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 1-11267 **Georgia Institute of Technology** **1825**
Study of complex permittivity measurements during high temperature recycling of space shuttle antenna windows and dielectric heat shield materials
Period *Obligations*
12/20/71-12/30/73 FY73: TOTAL: \$64,956
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bomar, S. H., Jr. LARC/Gilreath, M. C. 45-Elec Engr
Bassett, H. L. LARC/Croswell, W. F.
Gorton, C. W.
(23-750 115-21-01)

NAS 2-6340 **Georgia Institute of Technology** **1826**
Hovering rotor potential flow theory
Period *Obligations*
02/12/71-02/11/74 FY73: TOTAL: \$112,844
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wu, J. ARC/Morse, H. A. 41-Aero Engr
(21-760 136-9X-00) (21-760 126-00-00) (21-760 126-9X-00)

NAS 3-15383 **Georgia Institute of Technology** **1827**
Lubricant solidification study
Period *Obligations*
04/16/71-07/01/71 FY73: TOTAL: \$8,199
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Winer, W. O. LERC/Jones, W. R., Jr. 46-Mech Engr
(22-760 126-61-14)

NAS 8-11242 **Georgia Institute of Technology** **1828**
Nonequilibrium kinetics
Period *Obligations*
06/01/66-07/01/77 FY73: TOTAL: \$5,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
MSFC/ 13-Physics
(62-740 129-00-00)

NAS 8-11389 **Georgia Institute of Technology** **1829**
Determination of dynamic fluid pressures
Period *Obligations*
06/01/66-07/01/77 FY73: TOTAL: \$3,005
Prin. Invest. *NASA Tech. Officer* *CASE Category*
MSFC/ 13-Physics
(62-910 933-50-00)

NAS 8-26658 **Georgia Institute of Technology** **1830**
Earth entry neutral atmospheric model (50-200km)
Period *Obligations*
01/14/71-11/01/72 FY73: TOTAL: \$48,647
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Justus, C. G. MSFC/Smith, R. E. 13-Physics
MSFC/Fichtl, G. H.
(62-742 124-12-11) (62-980 908-52-46)

NAS 8-27375 **Georgia Institute of Technology** **1831**
Design, fabrication and delivery of an image forming light modulator with associated equipment required for operation
Period *Obligations*
05/25/71-08/01/72 FY73: TOTAL: \$79,823
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shackelford, R. G. MSFC/Kerr, J. H. 42-Astro Engr
MSFC/Burke, H. D.
(62-975 974-11-02)

NASA'S UNIVERSITY PROGRAM **GEORGIA (Continued)**

NAS 8-27681 **Georgia Institute of Technology** **1832**
Study of electro-optic materials technology

Period	FY73:	Obligations
06/21/71-11/30/72		TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Shackelford, R. G.	MSFC/Kerr, J. H.	13-Physics
	MSFC/Pitts, E. H.	

(62-500 150-22-17)

NAS 8-28148 **Georgia Institute of Technology** **1833**
Study of mathematical modeling of communications systems transponders and receivers

Period	FY73:	Obligations
12/02/71-12/01/72		TOTAL: \$48,964
Prin. Invest.	NASA Tech. Officer	CASE Category
Walsh, J. R.	MSFC/Kerr, J. H.	45-Elec Engr
	MSFC/Smith, H. F.	

(62-910 933-50-00)

NAS 8-28215 **Georgia Institute of Technology** **1834**
Design, fabrication & delivery of an engineering model fiber-optics detector

Period	FY73:	Obligations
12/20/71-01/01/73		TOTAL: \$19,986
Prin. Invest.	NASA Tech. Officer	CASE Category
McSweeney, A.	MSFC/Kerr, J. H.	45-Elec Engr
Shackelford, R. G.	MSFC/Smith, H. F.	

(62-975 974-11-02)

NAS 8-28591 **Georgia Institute of Technology** **1835**
Development of a coherent high scanner

Period	FY73:	Obligations
05/09/72-10/08/73		TOTAL: \$73,855
Prin. Invest.	NASA Tech. Officer	CASE Category
Callor, W. R.	MSFC/Kerr, J. H.	45-Elec Engr
	MSFC/Smith, H. F.	

(62-910 933-50-00)

NAS 8-28735 **Georgia Institute of Technology** **1836**
Experiments on sphere forming & composite casting

Period	FY73:	Obligations
05/16/72-06/18/74	\$38,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Brown, J. L.	MSFC/Hasemeyer, E. A.	47-Materials Engr
	MSFC/McPherson, W. B.	

(62-960 948-90-95)

NAS 8-29860 **Georgia Institute of Technology** **1837**
Design, fabrication, testing, & delivery of electron gun

Period	FY73:	Obligations
06/08/73-12/31/73	\$23,938	TOTAL: \$23,938
Prin. Invest.	NASA Tech. Officer	CASE Category
Hart, R. K.	MSFC/Kerr, J. H.	45-Elec Engr
	MSFC/Pitts, E. H.	

(62-680 160-75-07)

NAS 9-10415 **Georgia Institute of Technology** **1838**
Study of heat rejection system

Period	FY73:	Obligations
01/16/70-06/15/72		TOTAL: \$96,971
Prin. Invest.	NASA Tech. Officer	CASE Category
Black, W. Z.	JSC/Simon, W. E.	46-Mech Engr
Wulff, W.		

(72-980 908-41-00)

NAS10-8375 **Georgia Institute of Technology** **1839**
Study of computer model development for electrical power system

Period	FY73:	Obligations
06/26/73-12/11/74	\$96,000	TOTAL: \$96,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Webb, R. P.	KSC/Wright, M. I.	45-Elec Engr
Debs, A. S.	KSC/Boggs, W. H.	
Ray, D. C.		

(76-980 909-64-42)

NGL 11-002-004 **Georgia Institute of Technology** **1840**
Theoretical and experimental research program in geophysics with emphasis on upper atmosphere chemical release studies

Period	FY73:	Obligations
09/27/62-05/31/76	\$35,000	TOTAL: \$675,075
Prin. Invest.	NASA Tech. Officer	CASE Category
Edwards, H. D.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	

(10-840 185-47-81) (10-850 188-00-00) (10-840 185-00-00)

NGL 11-002-062 **Georgia Institute of Technology** **1841**
Study of non-linear rarefied gas flows by the discrete ordinate method

Period	FY73:	Obligations
02/06/68-01/01/73		TOTAL: \$139,836
Prin. Invest.	NASA Tech. Officer	CASE Category
Huang, A. B.	HQ-RA/Gessow, A.	41-Aero Engr

(10-740 129-00-00)

NGL 11-002-083 **Georgia Institute of Technology** **1842**
Application of the Galerkin method in the design of stable liquid rocket motors

Period	FY73:	Obligations
08/01/68-07/01/73	\$14,161	TOTAL: \$165,911
Prin. Invest.	NASA Tech. Officer	CASE Category
Zinn, B. T.	LERC/Priem, R. J.	41-Aero Engr

(22-704 502-04-25)

NGL 11-002-085 **Georgia Institute of Technology** **1843**
Behavior of nozzles and acoustic liners in three-dimensional acoustic fields

Period	FY73:	Obligations
02/18/69-02/28/74	\$29,852	TOTAL: \$226,320
Prin. Invest.	NASA Tech. Officer	CASE Category
Zinn, B. T.	LERC/Priem, R. J.	46-Mech Engr

(22-704 502-04-25) (62-710 128-00-00)

NGL 11-002-096 **Georgia Institute of Technology** **1844**
Research on stability of large shells

Period	FY73:	Obligations
04/04/69-04/01/74	\$28,473	TOTAL: \$468,473
Prin. Invest.	NASA Tech. Officer	CASE Category
Horton, W. H.	LARC/Peterson, J. P.	41-Aero Engr

(23-704 501-22-01) (23-760 722-00-00)

NGR 11-002-081 **Georgia Institute of Technology** **1845**
Phase 11 engineering systems design program

Period	FY73:	Obligations
05/28/68-08/31/73		TOTAL: \$107,348
Prin. Invest.	NASA Tech. Officer	CASE Category
Hansen, A. G.	HQ-PY/Vitale, J. A.	99-Multi-Discip

(10-370 183-00-00)

NASA'S UNIVERSITY PROGRAM
GEORGIA (Continued)

NGR 11-002-133 Georgia Institute of Technology 1846
Investigations of lubricant rheology as applied to elastohydrodynamic lubrication

Period	Obligations	
03/05/71-04/04/74	FY73: \$31,002	TOTAL: \$96,123
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Winer, W. O.	LERC/Jones, W. R., Jr.	49-Engr, NEC
Sanborn, D. M.		
(22-704 502-21-24)	(22-740 129-03-24)	(22-740 129-00-00)

NGR 11-002-166 Georgia Institute of Technology 1852
Comparative evaluation of solar fission, fusion and fossil power systems

Period	Obligations	
03/13/73-08/31/73	FY73: \$10,305	TOTAL: \$10,305
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Clement, J. D.	LERC/Kascak, A. F.	49-Engr, NEC
Williams, J. R.		
(22-704 503-04-01)		

NGR 11-002-145 Georgia Institute of Technology 1847
Exploratory investigations of an extra-terrestrial power plant utilizing a gaseous core breeder with MHD conversion

Period	Obligations	
11/15/71-04/30/73	FY73:	TOTAL: \$44,976
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kallfelz, J. M.	LERC/Kascak, A. F.	49-Engr, NEC
Williams, J. R.	LERC/Ragsdale, R. G.	
Clement, J. D.		
(22-720 112-28-20)		

NGR 11-002-169 Georgia Institute of Technology 1853
Research on recovery of fleets based on statistical methods, fracture mechanics, and fatigue theories

Period	Obligations	
02/09/73-03/31/74	FY73: \$12,494	TOTAL: \$12,494
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hanagud, S. V.	LARC/Leybold, H. A.	21-Mathematics
	LARC/Davidson, J. R., Jr.	
(23-704 501-22-02)		

NGR 11-002-146 Georgia Institute of Technology 1848
The attenuation of radiant energy in seeded hydrogen plasmas and experimental study related to the gaseous core nuclear rocket

Period	Obligations	
09/10/71-07/31/73	FY73: \$32,000	TOTAL: \$77,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Williams, J. R.	LERC/Masser, C. C.	49-Engr, NEC
Clement, J. D.		
Thompson, S.		
(22-704 503-04-01)	(22-720 112-28-20)	

NGR 11-002-177 Georgia Institute of Technology 1854
Study of effects of injector geometry on fuel air mixing and combustion

Period	Obligations	
09/01/73-08/31/74	FY73: \$18,932	TOTAL: \$18,932
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bangert, L. H.	LARC/Boatright, W. B.	41-Aero Engr
	LARC/Anderson, G. Y.	
(23-704 501-04-03)		

NGR 11-002-157 Georgia Institute of Technology 1849
Theory of turbulent chemically reacting flows with application to supersonic combustion

Period	Obligations	
11/01/72-10/01/73	FY73: \$32,200	TOTAL: \$32,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huang, A. B.	LARC/Evans, J. S.	41-Aero Engr
	LARC/Anderson, G. Y.	
(23-704 501-04-03)		

NGT 11-002-006 Georgia Institute of Technology 1855
Training of graduate students in space-related science and technology

Period	Obligations	
04/13/62-08/01/72	FY73:	TOTAL: \$1,322,928
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Webb, S. C.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGR 11-002-158 Georgia Institute of Technology 1850
Resident fellowship program in computer science

Period	Obligations	
05/23/72-09/11/73	FY73:	TOTAL: \$24,631
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tapia, M. A.	LARC/Eskew, M. H.	45-Elec Engr
	LARC/Michaels, T. S.	
(23-770 137-67-02)		

NGT 11-002-064 Georgia Institute of Technology 1856
Training of predoctoral graduate students in the field of engineering design

Period	Obligations	
04/20/67-08/01/72	FY73:	TOTAL: \$288,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hansen, A. G.	HQ-PY/Vitale, J.	99-Multi-Discip
(10-370 181-00-00)		

NGR 11-002-159 Georgia Institute of Technology 1851
Nonequilibrium turbulent wall flow by statistical method

Period	Obligations	
08/01/72-07/01/73	FY73: \$18,700	TOTAL: \$18,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Huang, A. B.	LARC/Bushnell, D. M.	41-Aero Engr
	LARC/Harris, J. E.	
(23-704 501-06-01)		

NGL 11-008-001 Morehouse College 1857
A research program in atmospheric and astrochemistry

Period	Obligations	
05/22/72-06/01/75	FY73:	TOTAL: \$50,682
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meredeth, C. W.	MSFC/Smith, R. E.	12-Chemistry
Gayles, J. N.	MSFC/Kent, M. I.	
(10-371 340-00-00)		

NASA'S UNIVERSITY PROGRAM **GEORGIA (Continued)**

NGR 11-008-002 **Morehouse College** **1858**
Research program in magnetogasdynamics utilizing hypervelocity coaxial plasma generators

Period	Obligations	
04/18/73-05/31/74	FY73: \$23,045	TOTAL: \$23,045
Prin. Invest.	NASA Tech. Officer	CASE Category
Spight, C.	HQ-PY/Pohly, J. G.	13-Physics
	MSFC/Shriver, E. L.	

(10-371 340-00-00)

NAS 8-29939 **University of Georgia** **1859**
Calculation of amplitude, phase and direction cosines over a specified receiver surface of plane wave acoustic rays

Period	Obligations	
06/21/73-12/21/73	FY73: \$23,896	TOTAL: \$23,896
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	19-Phys Sci, NEC

(62-950 953-37-00)

NASW 2401 **University of Georgia** **1860**
Computer software management information center operation

Period	Obligations	
10/10/72-06/01/73	FY73: \$163,286	TOTAL: \$163,286
Prin. Invest.	NASA Tech. Officer	CASE Category
Park, M. K.	HQ-KT/Carlson, J. M.	99-Multi-Discip
	HQ-KT/Phillips, R. J.	

(10-250 141-93-01)

NGR 11-003-020 **University of Georgia** **1861**
Stochastic systems

Period	Obligations	
11/11/69-10/06/72	FY73:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Adomian, G.	HQ-RA/Rosenfeld, S. A.	21-Mathematics

(10-740 129-00-00) (10-740 129-04-20)

NGR 11-003-033 **University of Georgia** **1862**
Interpretation of Mars stratigraphy and geomorphology from the Mariner Mars 1969 television pictures

Period	Obligations	
06/04/71-04/14/73	FY73:	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Herz, N.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Morris, E. C.	

(10-840 384-50-80)

NGR 11-003-037 **University of Georgia** **1863**
Interpretation of stratigraphy and geologic mapping of Mars from Mariner Mars 1971 television pictures

Period	Obligations	
05/24/72-04/14/74	FY73: \$17,000	TOTAL: \$32,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Howard, J. H., III	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	

(10-840 384-50-80)

HAWAII

NAS 2-6624 **University of Hawaii** **1864**
Study of metabolism & energetics in hypogravity

Period	Obligations	
09/15/71-08/31/73	FY73: \$33,000	TOTAL: \$57,938
Prin. Invest.	NASA Tech. Officer	CASE Category
Siegal, S. M.	ARC/Taketa, S. T.	51-Biology
	ARC/Sandler, H.	

(21-970 970-21-61)

NAS 2-6700 **University of Hawaii** **1865**
Advanced forms of computer communications networks

Period	Obligations	
11/01/71-08/31/73	FY73: \$939,577	TOTAL: \$1,470,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Litchenberger, W.	ARC/Pirtle, M. W.	99-Multi-Discip
Abramson, N.	ARC/Smith, M.	

(21-760 366-00-00)

NAS 5-11303 **University of Hawaii** **1866**
Additional programming and data reduction of uncalibrated Stokes parameters

Period	Obligations	
06/11/67-03/01/73	FY73:	TOTAL: \$36,291
Prin. Invest.	NASA Tech. Officer	CASE Category
Wolstencroft, R. D.	GSFC/Brandt, J. C.	11-Astronomy

(51-850 188-38-52) (51-850 385-38-00) (51-850 188-00-00)

NAS 8-27950 **University of Hawaii** **1867**
An observational investigation of coronal active regions in support of the Apollo telescope mount in the first Skylab mission.

Period	Obligations	
11/03/71-03/02/74	FY73: \$36,996	TOTAL: \$301,996
Prin. Invest.	NASA Tech. Officer	CASE Category
Orrall, F. Q.	MSFC/McGuire, J. P.	11-Astronomy
	MSFC/Gary, A.	

(62-960 996-00-00)

NASW 2326 **University of Hawaii** **1868**
Design development and fabrication of research equipment

Period	Obligations	
06/22/72-06/15/73	FY73:	TOTAL: \$258,269
Prin. Invest.	NASA Tech. Officer	CASE Category
Jefferies, J. T.	HQ-SM/Strickland, A. T.	11-Astronomy

(10-810 383-09-50) (10-810 195-43-50)

NGF 12-001-102 **University of Hawaii** **1869**
Acquisition of scientific research facilities

Period	Obligations	
05/12/72-05/31/73	FY73: \$17,800	TOTAL: \$142,800
Prin. Invest.	NASA Tech. Officer	CASE Category
Jefferies, J. T.	HQ-SM/Strickland, A. T.	11-Astronomy

(10-810 195-43-50)

NGL 12-001-011 **University of Hawaii** **1870**
Research in coronal and chromospheric physics

Period	Obligations	
11/16/64-10/01/74	FY73: \$150,000	TOTAL: \$2,929,234
Prin. Invest.	NASA Tech. Officer	CASE Category
Jefferies, J. T.	HQ-SG/Weldon, J. M.	11-Astronomy
Orrall, F. Q.	HQ-SG/Oertel, G. K.	

(10-850 188-38-52)

NASA'S UNIVERSITY PROGRAM

HAWAII (Continued)

NGL 12-001-042 **University of Hawaii** **1871**
 Performance and capabilities of terrestrial organisms in extreme and unusually gaseous and liquid environments
Period *Obligations*
 04/14/67-06/01/74 FY73: \$50,000 TOTAL: \$351,378
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Siegel, S. M. HQ-SL/Young, R. S. 51-Biology
 (10-840 192-55-64)

NGL 12-001-046 **University of Hawaii** **1872**
 Research in information transmission & processing
Period *Obligations*
 02/16/68-02/01/72 FY73: TOTAL: \$166,801
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Peterson, W. W. GSFC/Morakis, J. 21-Mathematics
 (51-750 125-00-00) (25-750 125-00-00)

NGL 12-001-057 **University of Hawaii** **1873**
 Research in planetary studies
Period *Obligations*
 05/21/68-06/01/75 FY73: TOTAL: \$1,476,972
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Jefferies, J. T. HQ-SL/Brunk, W. E. 11-Astronomy
 Sinton, W. M. (10-840 185-00-00) (10-840 196-00-00)
 (10-840 196-41-80)

NGR 12-001-075 **University of Hawaii** **1874**
 Research in solar ultraviolet spectroscopy
Period *Obligations*
 12/09/69-09/30/73 FY73: \$250,000 TOTAL: \$1,000,421
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Jefferies, J. T. HQ-SG/Weldon, J. M. 11-Astronomy
 HQ-SG/Oertel, G. K.
 (10-850 879-11-00)

NGR 12-001-083 **University of Hawaii** **1875**
 A high resolution interferometer for planetary spectroscopy
Period *Obligations*
 09/14/70-11/30/72 FY73: TOTAL: \$191,181
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Sinton, W. M. HQ-SL/Brunk, W. E. 11-Astronomy
 HQ-SL/Fellows, R. F.
 (10-840 196-00-00) (10-840 196-41-81)

NGR 12-001-097 **University of Hawaii** **1876**
 The measurement of infrared sky noise and water vapor
Period *Obligations*
 07/12/71-06/30/72 FY73: TOTAL: \$19,366
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Sinton, W. M. HQ-SL/Brunk, W. E. 11-Astronomy
 HQ-SL/Fellows, R. F.
 (10-840 196-41-80)

NGR 12-001-109 **University of Hawaii** **1877**
 N-heterocyclic compounds role in chemical evolution distribution in meteorites ancient sediments and as products of spark discharge reactions
Period *Obligations*
 06/26/72-04/30/74 FY73: \$32,575 TOTAL: \$62,575
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Folsome, C. E. HQ-SL/Geib, D. S. 59-Life Sci, NEC
 HQ-SL/Young, R. S.
 (10-840 192-55-61)

NGR 12-001-111 **University of Hawaii** **1878**
 Facilitation of infrared observations from the Mauna Kea Observatory
Period *Obligations*
 06/14/72-03/31/73 FY73: TOTAL: \$28,282
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Jefferies, J. T. HQ-SG/Roman, N. G. 11-Astronomy
 HQ-SG/Bogges, N. W.
 (10-850 188-41-51)

NGT 12-001-005 **University of Hawaii** **1879**
 Training of predoctoral graduate students in space related sciences & technology
Period *Obligations*
 03/17/64-08/01/72 FY73: TOTAL: \$208,857
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gorter, W. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NSR 12-001-019 **University of Hawaii** **1880**
 Design, development, fabrication & installation of a 84 inch telescope for lunar planetary & stellar observations
Period *Obligations*
 06/30/65-12/31/73 FY73: TOTAL: \$3,024,796
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Jefferies, J. T. HQ-SL/Brunk, W. E. 11-Astronomy
 HQ-SL/Fellows, R. F.
 (10-840 185-00-00) (10-840 196-41-81)

IDAHO

NAS 5-21850 **University of Idaho** **1881**
 ERTS-A data user investigation of the applications of the Earth Resources Technological Satellite in Idaho
Period *Obligations*
 09/27/72-10/01/73 FY73: \$33,750 TOTAL: \$33,750
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Tisdale, E. W. GSFC/Crump, E. W. 39-Env Sci, NEC
 (51-680 641-14-07)

NAS 9-12078 **University of Idaho** **1882**
 Development of equation
Period *Obligations*
 06/28/71-06/01/72 FY73: TOTAL: \$20,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Stewart, R. JSC/Scott, W. 13-Physics
 (72-910 924-22-00)

NGR 13-001-008 **University of Idaho** **1883**
 Age-dating of orthogenesis in the clearwater orogenic zone, Idaho
Period *Obligations*
 10/27/69-06/01/73 FY73: TOTAL: \$24,328
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Reid, R. R. JSC/Morrison, D. A. 32-Geological Sci
 (72-910 914-50-00)

NASA'S UNIVERSITY PROGRAM **IDAHO (Continued)**

NGR 13-001-014 **University of Idaho** **1884**
Interpretation of a lunar far side area
Period *Obligations*
06/11/73-06/30/74 FY73: \$6,847 TOTAL: \$6,847
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hall, W. B. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Allenby, R. J.
(10-810 383-09-50)

ILLINOIS

NGL 14-004-028 **Illinois Institute of Technology** **1885**
Numerical solutions and visual display of flow over aerodynamic bodies
Period *Obligations*
09/25/67-11/01/72 FY73: TOTAL: \$93,644
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Loran, Z. LERC/Taylor, M. F. 41-Aero Engr
LERC/Ragsdale, R. G.
(22-720 122-00-00)

NGR 14-004-008 **Illinois Institute of Technology** **1886**
Turbulence coefficients and stability studies for the coaxial flow of dissimilar fluids
Period *Obligations*
06/11/64-08/30/73 FY73: TOTAL: \$812,335
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Weinstein, H. LERC/Ragsdale, R. G. 43-Chem Engr
Lavan, Z.
(45-720 122-00-00) (45-720 122-28-02) (22-720 112-28-20)

NGR 14-004-049 **Illinois Institute of Technology** **1887**
The influence of impurities upon the rate of nickel diffusion in face centered cubic iron
Period *Obligations*
05/13/71-05/31/74 FY73: TOTAL: \$30,572
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Higgins, G. T. HQ-SM/Bryson, R. P. 39-Env Sci, NEC
HQ-MA/Pomeroy, J. H.
(10-810 195-42-67)

NGT 14-004-002 **Illinois Institute of Technology** **1888**
Training of graduate students in space-related science and technology
Period *Obligations*
04/11/63-08/01/72 FY73: TOTAL: \$976,808
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Grad, A. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 9-7222 **Northwestern University** **1889**
Ultraviolet stellar astronomy experiment
Period *Obligations*
06/30/67-06/00/74 FY73: TOTAL: \$1,917,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Ray, J. W. JSC/Mansur, S. R. 11-Astronomy
(72-960 948-80-80) (72-960 948-80-00) (72-980 905-00-00)

NAS 9-12280 **Northwestern University** **1890**
Star study
Period *Obligations*
11/23/71-01/01/74 FY73: TOTAL: \$45,500
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hynek, J. A. JSC/Henize, K. G. 11-Astronomy
(72-910 924-23-00)

NGL 14-007-016 **Northwestern University** **1891**
Optical study
Period *Obligations*
02/05/65-05/01/74 FY73: TOTAL: \$705,863
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hynek, J. A. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Allenby, R. J.
(10-840 185-00-00) (10-810 195-42-64) (10-810 195-00-00)

NGL 14-007-041 **Northwestern University** **1892**
A study of celestial objects of high angular momenta
Period *Obligations*
02/18/66-04/30/74 FY73: \$20,000 TOTAL: \$185,251
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Huang, S. S. HQ-SG/Bogges, N. W. 11-Astronomy
HQ-SG/Roman, N. G.
(10-850 188-41-51) (10-850 188-00-00)

NGL 14-007-058 **Northwestern University** **1893**
Research program in administration
Period *Obligations*
06/04/68-04/01/73 FY73: TOTAL: \$425,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Radnor, M. HQ-PY/Morris, J. D. 79-Soc Sci, NEC
GSFC/Fitzpatrick, J. F.
(10-370 183-00-00)

NGL 14-007-062 **Northwestern University** **1894**
Studies and analysis of the management of scientific research and development
Period *Obligations*
06/27/67-07/01/72 FY73: TOTAL: \$260,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rubenstein, A. H. HQ-PY/Morris, J. D. 99-Multi-Discip
Thompson, C. N. HQ-KT/Philips, R. J.
(10-370 183-00-00) (10-250 143-00-00)

NGL 14-007-081 **Northwestern University** **1895**
Potential and charge distribution near a metallic interface
Period *Obligations*
01/21/69-12/31/75 FY73: \$25,000 TOTAL: \$175,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Waber, J. T. LERC/Lad, R. A. 13-Physics
LERC/Bambakidis, G.
(22-704 502-01-02) (10-740 129-00-00) (10-740 129-03-40)

NGR 14-007-048 **Northwestern University** **1896**
Development of instrumentation for a study of lunar sky brightness
Period *Obligations*
07/01/68-01/01/74 FY73: TOTAL: \$243,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hynek, J. A. JSC/Kondo, Y. 11-Astronomy
(72-910 914-40-00) (10-850 188-00-00) (72-850 188-00-00)

NASA'S UNIVERSITY PROGRAM

ILLINOIS (Continued)

NGR 14-007-069 **Northwestern University** **1897**
 Ultraviolet astronomical observations with an all-reflecting Schmidt telescope

Period	FY73:	Obligations	TOTAL:
06/10/68-08/01/71			\$108,147

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Henize, K. G. HQ-MT/ 11-Astronomy
 (10-980 945-84-00) (10-850 188-00-00)

NGR 14-007-071 **Northwestern University** **1898**
 Microwave conductivity of slightly ionized gases and electromagnetic scintillations

Period	FY73:	Obligations	TOTAL:
02/25/70-05/01/72			\$51,249

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Mintzer, D. GSFC/Stone, R. G. 11-Astronomy
 (51-850 877-12-00) (51-750 125-00-00) (25-750 125-00-00)

NGR 14-007-084 **Northwestern University** **1899**
 Effects of surface irregularities and friction on elastohydrodynamic lubrication

Period	FY73:	Obligations	TOTAL:
10/20/69-01/31/74	\$25,338		\$107,976

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Ching, H. S. LERC/Zaretsky, E. V. 46-Mech Engr
 LERC/Anderson, W. J.
 (22-704 501-24-10)

NGR 14-007-114 **Northwestern University** **1900**
 Study program of the influences of intensity and scale of turbulence on emission concentrations in the primary zone of a gas turbine combustor

Period	FY73:	Obligations	TOTAL:
06/01/71-06/14/74			\$47,625

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Kovitz, A. A. LERC/Grobman, J. S. 41-Aero Engr
 (22-760 126-63-10)

NGR 14-007-122 **Northwestern University** **1901**
 Time variations of UV emission feature of BE stars

Period	FY73:	Obligations	TOTAL:
08/01/72-07/01/73	\$10,000		\$10,000

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Bahng, J. D. HQ-SG/Roman, N. G. 11-Astronomy
 HQ-SG/Calahan, D.
 (10-850 385-41-00)

NGR 14-007-129 **Northwestern University** **1902**
 Decision-directed adaptive estimation

Period	FY73:	Obligations	TOTAL:
11/01/72-10/01/73	\$26,416		\$26,416

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Schaefer, B. M. LARC/Painter, J. H. 45-Elec Engr
 (23-620 636-18-71)

NGT 14-007-004 **Northwestern University** **1903**
 Training of graduate students in space-related science and technology

Period	FY73:	Obligations	TOTAL:
04/03/63-08/01/72			\$994,509

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Baker, R. H. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NSR 14-007-037 **Northwestern University** **1904**
 Partial support of the sixth biennial gas dynamics symposium

Period	FY73:	Obligations	TOTAL:
07/01/65-05/01/76			\$2,000

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Cambel, A. B. HQ-RR/ 13-Physics
 (10-740 129-00-00)

NSR 14-007-050 **Northwestern University** **1905**
 Symposium on manned spacecraft optical astronomy experiments

Period	FY73:	Obligations	TOTAL:
04/01/66-05/01/77			\$3,047

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Henize, K. G. HQ-SG/ 11-Astronomy
 (10-850 188-00-00)

NSR 14-007-103 **Northwestern University** **1906**
 Study of the communications systems of the office of advanced research and technology

Period	FY73:	Obligations	TOTAL:
10/22/70-08/01/72			\$49,957

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Adnor, M. R. HQ-RM/Brandon, F. D. 99-Multi-Discip
 HQ-RM/Wisniewski, R. J.
 (10-705 130-00-00) (10-705 130-06-06)

NGR 14-008-026 **Southern Illinois University - Carbondale** **1907**
 Characterization of developmental physiology of previously unstudied life form, obligately, halophilic blue-green algae, aphanothece halothytica

Period	FY73:	Obligations	TOTAL:
05/08/73-05/31/74	\$37,000		\$37,000

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Yopp, J. H. HQ-SL/Young, R. S. 51-Biology
 (10-840 192-55-64)

NAS 2-5601 **University of Chicago** **1908**
 Charged particle instrument

Period	FY73:	Obligations	TOTAL:
06/01/69-04/30/73	\$8,992		\$1,237,692

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Simpson, J. A. ARC/Hall, C. F. 13-Physics
 (21-840 811-22-00)

NAS 2-6551 **University of Chicago** **1909**
 Pioneer F/G charged particle experiment data analysis

Period	FY73:	Obligations	TOTAL:
08/09/71-07/30/72	\$162,500		\$257,275

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Simpson, J. A. ARC/Hall, C. F. 13-Physics
 (21-840 811-22-00)

NAS 5-9096 **University of Chicago** **1910**
 Cosmic ray electron experiment

Period	FY73:	Obligations	TOTAL:
11/18/64-09/30/73	\$5,000		\$1,159,000

Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Meyer, P. GSFC/Meese, K. J. 13-Physics
 (51-850 841-00-00)

NASA'S UNIVERSITY PROGRAM
ILLINOIS (Continued)

NAS 5-9366 **University of Chicago** **1911**
Low energy-heavy cosmic ray particles experiment for OGO-E spacecraft

<i>Period</i>	<i>Obligations</i>
06/28/66-12/31/72	FY73: TOTAL: \$569,175
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Simpson, J. A.	GSFC/Meesse, K. J. 13-Physics
(51-850 841-00-00)	(51-850 385-50-00) (51-850 841-12-00)

NAS 5-11037 **University of Chicago** **1912**
IMPI solar particles radiation experiment

<i>Period</i>	<i>Obligations</i>
08/15/67-09/30/73	FY73: \$52,000 TOTAL: \$675,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Simpson, J. A.	GSFC/Ferer, B. H. 13-Physics
Munos, M. G.	
Verma, S. D.	
(51-850 861-52-00)	

NAS 5-11067 **University of Chicago** **1913**
IMP-H&J solar flare and isotope experiment

<i>Period</i>	<i>Obligations</i>
06/11/68-08/31/75	FY73: \$156,000 TOTAL: \$916,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Simpson, J. D.	GSFC/Davis, M. A. 13-Physics
(51-850 861-42-00)	

NAS 8-27407 **University of Chicago** **1914**
HEAO-MISSION B experiment feasibility study on high energy electron

<i>Period</i>	<i>Obligations</i>
06/07/71-04/30/73	FY73: \$176,039 TOTAL: \$251,039
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Meyer, P.	MSFC/Dabbs, J. R. 11-Astronomy
	MSFC/Cochran, J.
(62-850 832-12-00)	

NAS 9-7887 **University of Chicago** **1915**
Measurement and analysis of 2 types of trace elements

<i>Period</i>	<i>Obligations</i>
06/25/68-01/31/72	FY73: TOTAL: \$337,338
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Anders, E.	JSC/Harris, J. W. 39-Env Sci, NEC
(72-910 914-40-00)	

NAS 9-11691 **University of Chicago** **1916**
Developmental and operational investigation of an echelle nebular spectrograph

<i>Period</i>	<i>Obligations</i>
04/15/71-12/31/72	FY73: TOTAL: \$47,611
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
O'Dell, C. R.	JSC/Parker, R. A. 11-Astronomy
	JSC/Bonner, G. P.
(72-910 924-23-00)	(72-910 914-50-00)

NGL 14-001-001 **University of Chicago** **1917**
Investigation of effects of solar wind in interplanetary space

<i>Period</i>	<i>Obligations</i>
08/01/60-07/01/74	FY73: \$61,000 TOTAL: \$770,372
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Parker, E. N.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Kavanagh, L. D.
(10-850 188-46-51)	

NGL 14-001-005 **University of Chicago** **1918**
High altitude balloon investigations on composition, energy spectrum & intensity of primary cosmic radiation at high & intermediate geomagnetic latitudes

<i>Period</i>	<i>Obligations</i>
05/01/61-10/01/74	FY73: \$380,000 TOTAL: \$3,607,258
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Meyer, P.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Kavanagh, L. D.
(10-850 188-46-51)	(10-850 385-46-00)

NGL 14-001-006 **University of Chicago** **1919**
Experimental and theoretical studies of energetic particles and electrodynamical processes in interplanetary space and in vicinity of planets

<i>Period</i>	<i>Obligations</i>
08/01/61-07/01/74	FY73: \$220,000 TOTAL: \$3,782,559
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Simpson, J. A.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Kavanagh, L. D.
(10-850 385-46-00)	(10-850 188-46-51)

NGL 14-001-009 **University of Chicago** **1920**
Theoretical & experimental investigations of superconductivity

<i>Period</i>	<i>Obligations</i>
03/27/63-10/01/72	FY73: TOTAL: \$652,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Cohen, M.	HQ-NS/Harrison, H. H. 99-Multi-Discip
(10-740 129-00-00)	

NGL 14-001-010 **University of Chicago** **1921**
Research and investigation of origin, age and composition of meteorites

<i>Period</i>	<i>Obligations</i>
03/11/63-03/01/75	FY73: \$5,000 TOTAL: \$1,042,703
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Anders, E.	HQ-SM/Bryson, R. P. 32-Geological Sci
	HQ-SM/Pomeroy, J. H.
(10-810 383-09-57)	(10-870 189-00-00) (10-860 848-00-00)

NGL 14-001-012 **University of Chicago** **1922**
Investigations in space related molecular biology, including consideration of molecular organization of extraterrestrial matter

<i>Period</i>	<i>Obligations</i>
06/05/63-02/28/74	FY73: TOTAL: \$1,771,136
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Moran, H. F.	HQ-SB/Jacobs, G. J. 59-Life Sci, NEC
(10-870 189-00-00)	(10-870 189-57-61)

NGL 14-001-060 **University of Chicago** **1923**
Study of comet tails by photoelectric spectrophotometry

<i>Period</i>	<i>Obligations</i>
05/18/65-08/01/73	FY73: TOTAL: \$147,516
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
O'Dell, C. R.	HQ-SG/Dubin, M. 11-Astronomy
	HQ-SG/Bogges, N. W.
(10-850 188-00-00)	(10-850 188-45-51)

**NASA'S UNIVERSITY PROGRAM
ILLINOIS (Continued)**

NGL 14-001-167 **University of Chicago** **1924**
Lunar sample analysis
Period *Obligations*
03/29/72-01/31/76 FY73: \$151,900 TOTAL: \$583,900
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Anders, E. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGL 14-001-169 **University of Chicago** **1925**
Lunar sample analysis
Period *Obligations*
01/19/71-01/31/76 FY73: \$50,700 TOTAL: \$144,700
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Clayton, R. N. JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)

NGL 14-001-171 **University of Chicago** **1926**
Lunar sample analysis
Period *Obligations*
01/19/71-01/31/76 FY73: \$55,000 TOTAL: \$212,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Smith, J. V. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGL 14-001-258 **University of Chicago** **1927**
Advanced technical developments in support of scientific experiments in space
Period *Obligations*
06/15/73-05/31/76 FY73: \$200,000 TOTAL: \$200,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Simpson, J. A. HQ-PY/Redding, E. R. 99-Multi-Discip
(10-371 340-00-00)

NGR 14-001-008 **University of Chicago** **1928**
Meteorological interpretation of satellite radiation data
Period *Obligations*
09/01/70-09/30/73 FY73: \$100,000 TOTAL: \$522,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fujita, T. T. GSFC/Shenk, W. E. 31-Atmos Sci
(51-680 160-44-51) (51-680 160-44-63) (51-680 160-44-70)

NGR 14-001-135 **University of Chicago** **1929**
Feasibility of the alpha scattering technique for Martian surface analysis
Period *Obligations*
02/25/69-07/31/73 FY73: \$79,500 TOTAL: \$384,832
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Turkevich, A. L. HQ-SL/Dwornik, S. E. 32-Geological Sci
HQ-SL/Allingham, J. W.
(10-250 141-93-02) (10-840 185-50-81)

NGR 14-001-147 **University of Chicago** **1930**
Interferometric high-resolution spectroscopy of optical interstellar lines
Period *Obligations*
03/18/70-12/31/73 FY73: \$22,000 TOTAL: \$100,306
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hobbs, L. M. HQ-SG/Kelsall, T. 11-Astronomy
HQ-SG/Roman, N. G.
(10-850 188-41-51) (10-850 188-00-00)

NGR 14-001-148 **University of Chicago** **1931**
Cloud particle size measurements in the atmosphere of Venus
Period *Obligations*
08/12/69-12/31/72 FY73: TOTAL: \$332,184
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Knollenberg, R. G. HQ-SL/Fellows, R. F. 31-Atmos Sci
HQ-SL/Hipscher, H. F.
(10-840 185-00-00) (10-840 185-47-80)

NGR 14-001-164 **University of Chicago** **1932**
Spectral measurement of the X-ray emission from nonflare solar active region
Period *Obligations*
05/19/70-09/30/73 FY73: \$150,000 TOTAL: \$449,090
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Blake, R. L. HQ-SG/Weldon, J. M. 11-Astronomy
HQ-SG/Oertel, G. K.
(10-850 879-11-00)

NGR 14-001-166 **University of Chicago** **1933**
Lunar sample analysis
Period *Obligations*
06/11/71-01/31/73 FY73: TOTAL: \$56,300
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fernandez-Moran, H. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGR 14-001-173 **University of Chicago** **1934**
Lunar sample analysis
Period *Obligations*
01/19/71-01/31/73 FY73: TOTAL: \$112,900
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hafner, S. S. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGR 14-001-188 **University of Chicago** **1935**
Operation of the OGO-IIL spacecraft & processing of Univ of Chicago OGO-IIL data beyond prime data life of the spacecraft
Period *Obligations*
02/08/71-06/30/72 FY73: TOTAL: \$18,427
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Simpson, J. A. HQ-SG/Hallenbeck, D. 13-Physics
HQ-SG/Schmerling, E. R.
(10-850 385-50-00)

NGR 14-001-190 **University of Chicago** **1936**
Operation of an air-borne echelle spectrograph
Period *Obligations*
06/01/71-12/31/72 FY73: TOTAL: \$20,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Odell, C. R. HQ-SG/Boggess, N. W. 11-Astronomy
(10-850 352-02-01)

NGR 14-001-193 **University of Chicago** **1937**
Interactions of heat, composition & motion in upper atmosphere
Period *Obligations*
06/01/71-09/30/72 FY73: TOTAL: \$25,359
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lindzen, R. S. GSFC/Theon, J. S. 31-Atmos Sci
GSFC/Wexler, R.
(51-680 160-44-55)

**NASA'S UNIVERSITY PROGRAM
ILLINOIS (Continued)**

NGR 14-001-194 University of Chicago 1938
Quantitative spectroscopy of planetary atmospheres
Period *Obligations*
07/20/71-02/28/74 FY73: \$26,871 TOTAL: \$56,857
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kaplan, L. D. HQ-SL/Fellows, R. F. 31-Atmos Sci
HQ-SL/Hipsher, H. F.
(10-840 384-47-81)

NGR 14-001-196 University of Chicago 1939
Definition phase of Grand Tour missions energetic particle investigations for outer planet missions
Period *Obligations*
06/01/71-03/31/73 FY73: TOTAL: \$48,081
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Simpson, J. A. HQ-SL/Mitz, M. A. 13-Physics
HQ-SL/Keller, J. W.
(10-840 186-68-68) (10-840 186-68-52)

NGR 14-001-199 University of Chicago 1940
Theory of tasks for hierarchical hybrid control systems
Period *Obligations*
06/15/71-08/31/72 FY73: TOTAL: \$80,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Greene, P. H. ARC/ 21-Mathematics
JPL/Moore, J. W.
(10-740 129-04-21)

NGR 14-001-203 University of Chicago 1941
Origin of organic compounds in meteorites
Period *Obligations*
08/17/71-09/30/73 FY73: \$35,000 TOTAL: \$70,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Anders, E. HQ-SL/Young, R. S. 32-Geological Sci
(10-840 192-55-62)

NGR 14-001-211 University of Chicago 1942
Far infrared photometry of H 11 regions planets using the NASA 30 cm flying infrared telescope
Period *Obligations*
02/14/72-12/31/73 FY73: \$46,994 TOTAL: \$67,088
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harper, D. A. ARC/Mason, R. H. 11-Astronomy
(21-850 352-02-01) (21-980 975-50-01)

NGR 14-001-224 University of Chicago 1943
Advanced technical development in support of scientific experiments in space
Period *Obligations*
06/09/72-06/01/74 FY73: TOTAL: \$200,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Simpson, J. A. HQ-PY/Redding, E. R. 19-Phys Sci, NEC
(10-371 340-00-00)

NGR 14-001-225 University of Chicago 1944
Physiology of the vestibular system of the squirrel monkey
Period *Obligations*
05/12/67-06/30/73 FY73: \$62,230 TOTAL: \$92,230
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fernandez, C. ARC/Daunton, N. G. 51-Biology
Goldberg, J. M.
(21-970 970-21-53)

NGR 14-001-227 University of Chicago 1945
Photometry of galactic and extragalactic far infrared sources using the 91.5 cm airborne infrared telescope
Period *Obligations*
02/27/73-02/28/75 FY73: \$85,000 TOTAL: \$85,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harper, D. A. ARC/Cameron, R. M. 11-Astronomy
ARC/Gillespie, C. M.
(21-850 352-02-03)

NGR 14-001-249 University of Chicago 1946
Physical properties of solar nebula as deduced from chondrites
Period *Obligations*
05/14/73-03/31/74 FY73: \$9,790 TOTAL: \$9,790
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Grossman, L. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Pomeroy, J. H.
(10-810 195-42-67)

NGT 14-001-015 University of Chicago 1947
Training of graduate students in space-related science and technology
Period *Obligations*
04/01/62-08/01/72 FY73: TOTAL: \$1,585,743
Prin. Invest. *NASA Tech. Officer* *CASE Category*
O'Connell, C. D. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NGR 14-012-004 University of Illinois - Chicago Circle 1948
Nitrogen chemistry significant to primordial systems
Period *Obligations*
01/21/66-12/31/72 FY73: TOTAL: \$311,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Boyer, J. H. HQ-SL/Young, R. S. 12-Chemistry
(10-870 189-00-00) (10-870 189-55-61)

NGR 14-012-026 University of Illinois - Chicago Circle 1949
Stress and altered gaseous environments as alternants of immune response
Period *Obligations*
03/31/72-12/31/73 FY73: \$13,700 TOTAL: \$38,700
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Guttman, H. N. JSC/Kimzey, S. L. 53-Other Medical
(72-970 970-51-15) (72-910 914-51-00)

AF306 24144 University of Illinois - Urbana 1950
ILLIAC IV-computer
Period *Obligations*
03/23/66-07/01/72 FY73: \$2,985,352 TOTAL: \$3,385,352
Prin. Invest. *NASA Tech. Officer* *CASE Category*
ARC/ 21-Mathematics
(21-760 366-00-00)

NAS 9-12446 University of Illinois - Urbana 1951
Treatment of control data in lunar phototriangulation
Period *Obligations*
02/16/72-01/31/74 FY73: TOTAL: \$29,400
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wong, K. W. JSC/Hill, R. O. 19-Phys Sci, NEC
(72-910 914-50-00)

NASA'S UNIVERSITY PROGRAM
ILLINOIS (Continued)

NAS 9-12459 **University of Illinois - Urbana** **1952**
Development of a tri-leaflet aortic valve prosthesis

<i>Period</i>	<i>Obligations</i>	
02/28/72-03/01/74	FY73: \$20,000	TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Karara, H. M.	JSC/Bender, M. J.	44-Civil Engr
(72-250 141-93-02)	(72-250 141-93-00)	

NGL 14-005-074 **University of Illinois - Urbana** **1953**
Physiological responses of central vestibular pathways and diffuse ascending systems to vestibular stimulation

<i>Period</i>	<i>Obligations</i>	
11/15/65-09/01/73	FY73: \$21,067	TOTAL: \$931,044
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ades, H. W.	LARC/Edge, P. M., Jr.	52-Clinical Med
	LARC/Cawthorn, J. M.	
(23-704 501-09-02)	(10-770 127-00-00)	(23-770 127-49-41)

NGL 14-005-140 **University of Illinois - Urbana** **1954**
Research on fluid dynamic and heat transfer problems of modern air breathing propulsive systems

<i>Period</i>	<i>Obligations</i>	
05/23/69-05/31/75	FY73: \$29,062	TOTAL: \$134,994
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chow, W. L.	LERC/Anderson, B. H.	41-Aero Engr
Korst, H. H.		
(22-704 501-24-06)	(22-760 720-03-11)	

NGR 14-005-002 **University of Illinois - Urbana** **1955**
Study of physical properties of ionosphere using satellite radio transmissions and theoretical study of wave propagation

<i>Period</i>	<i>Obligations</i>	
07/09/59-06/30/73	FY73: \$30,000	TOTAL: \$1,191,393
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yen, K. C.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Hallenbeck, D. R.	
(10-850 385-36-00)		

NGR 14-005-009 **University of Illinois - Urbana** **1956**
Study of selected radiation & propagation problems related to antennas & probes in magneto-ionic media

<i>Period</i>	<i>Obligations</i>	
04/01/65-01/31/73	FY73:	TOTAL: \$378,884
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Deschamps, G. A.	HQ-SG/Schmerling, E. R.	
	HQ-SG/Opp, A. G.	99-Multi-Discip
(10-850 188-00-00)	(10-850 188-39-54)	(10-850 188-36-57)

NGR 14-005-010 **University of Illinois - Urbana** **1957**
Study of line integrals, surface integrals, volume, centroids and moments of inertia for a class of shells of revolution and for a larger class of shells

<i>Period</i>	<i>Obligations</i>	
05/29/63-09/01/72	FY73:	TOTAL: \$91,729
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Worley, W. J.	HQ-RR/	19-Phys Sci, NEC
(10-740 129-00-00)	(62-910 933-50-00)	

NGR 14-005-013 **University of Illinois - Urbana** **1958**
Investigation of electron density collision frequency in the lower ionosphere, D & E regions

<i>Period</i>	<i>Obligations</i>	
10/01/63-07/31/71	FY73:	TOTAL: \$1,718,202
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowhill, S. A.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Eaton, P. T.	
(10-850 879-00-00)	(10-850 879-11-00)	

NGR 14-005-138 **University of Illinois - Urbana** **1959**
An analysis of film cooling as an alternate protection system for spacecraft during atmospheric reentry

<i>Period</i>	<i>Obligations</i>	
03/20/69-08/15/72	FY73:	TOTAL: \$47,152
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Clausing, A. M.	LARC/Swann, R. T.	41-Aero Engr
	LARC/Tompkins, S. S.	
(23-742 124-00-00)		

NGR 14-005-144 **University of Illinois - Urbana** **1960**
Determination of multiple element airfoil geometries for maximizing lift coefficient

<i>Period</i>	<i>Obligations</i>	
02/16/70-06/14/73	FY73:	TOTAL: \$70,851
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ormsbee, A. I.	LARC/Morgan, H. L.	41-Aero Engr
(23-702 741-72-03)	(23-760 737-54-10)	(23-760 737-00-00)

NGR 14-005-149 **University of Illinois - Urbana** **1961**
Study of local pressure field in turbulent shear flow and its relation to aerodynamic noise generation

<i>Period</i>	<i>Obligations</i>	
02/10/70-06/30/73	FY73:	TOTAL: \$114,031
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jones, B. G.	LERC/Dorsch, R. G.	46-Mech Engr
(22-762 132-80-01)	(22-740 129-00-00)	(22-740 129-01-20)

NGR 14-005-175 **University of Illinois - Urbana** **1962**
Study physiology of expectancy and motor preparedness

<i>Period</i>	<i>Obligations</i>	
09/13/71-09/31/72	FY73:	TOTAL: \$24,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Donchin, E.	ARC/Tanner, T. A.	69-Psych, NEC
	ARC/Leifer, L. J.	
(21-970 970-21-52)		

NGR 14-005-176 **University of Illinois - Urbana** **1963**
Investigation of the atmosphere of Jupiter by studying the ammonia feature at a wavelength of 1.26cm

<i>Period</i>	<i>Obligations</i>	
05/22/72-01/31/74	FY73:	TOTAL: \$18,969
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dichel, J. R.	HQ-SL/Brunk, W. E.	11-Astronomy
(10-840 196-41-82)		

NGR 14-005-177 **University of Illinois - Urbana** **1964**
Studies of local pressure and velocity fields in large scale subsonic facilities, including simple jets & variable by-pass jets, and their relation to aerodynamic noise generation

<i>Period</i>	<i>Obligations</i>	
05/25/71-06/15/74	FY73:	TOTAL: \$47,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jones, B. G.	LERC/Karchmer, A. M.	41-Aero Engr
(22-760 126-63-10)		

NASA'S UNIVERSITY PROGRAM **ILLINOIS (Continued)**

NGR 14-005-181 **University of Illinois - Urbana** **1965**
Rocket studies of the lower ionosphere

Period	Obligations
08/01/71-07/31/72	FY73: \$480,000 TOTAL: \$765,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bowhill, S. A.	HQ-SG/Schmerling, E. R. 19-Phys Sci, NEC
	WS/Milliner, C. F., Jr.

(53-850 879-11-00)

NGR 14-005-183 **University of Illinois - Urbana** **1966**
A theoretical investigation of nuclear induced plasma kinetics

Period	Obligations
12/07/71-03/31/74	FY73: \$26,000 TOTAL: \$46,000
Prin. Invest.	NASA Tech. Officer CASE Category
Miley, G. H.	HQ-NS/Thom, K. 12-Chemistry
	LARC/Allerio, F.

(10-704 503-10-03) (10-720 112-02-22) (45-720 112-02-22)

NGR 14-005-189 **University of Illinois - Urbana** **1967**
Theoretical study of scintillation of transionospheric radio signals

Period	Obligations
08/01/72-07/01/73	FY73: \$26,765 TOTAL: \$26,765
Prin. Invest.	NASA Tech. Officer CASE Category
Yeh, K. C.	GSFC/Golden, T. S. 45-Elec Engr

(51-620 636-18-00)

NGR 14-005-192 **University of Illinois - Urbana** **1968**
Neural control of locomotor performance in insects

Period	Obligations
12/06/72-12/31/73	FY73: \$29,992 TOTAL: \$29,992
Prin. Invest.	NASA Tech. Officer CASE Category
Heath, J. E.	ARC/Williams, B. A. 51-Biology
	ARC/Quattrone, P. D.

(21-970 970-21-61)

NGR 14-005-193 **University of Illinois - Urbana** **1969**
High intensity combustion and nitrous oxide formation in a turbine engine combustor

Period	Obligations
06/22/72-06/30/75	FY73: \$31,936 TOTAL: \$50,936
Prin. Invest.	NASA Tech. Officer CASE Category
Strehlow, R. A.	LERC/Marek, C. J. 41-Aero Engr

(22-704 501-15-83) (22-702 741-72-04)

NGR 14-005-194 **University of Illinois - Urbana** **1970**
Low noise level general aviation propeller

Period	Obligations
09/15/72-09/01/73	FY73: \$42,000 TOTAL: \$42,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ormsbee, A. I.	LARC/Stickle, J. W. 41-Aero Engr
	LARC/Crane, H. L.

(23-702 760-60-01)

NGR 14-005-202 **University of Illinois - Urbana** **1971**
Implementation of ILLIAC IV algorithms for multispectral image interpretation

Period	Obligations
02/27/73-06/30/73	FY73: \$60,000 TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ray, R. M.	ARC/Watson, V. R. 39-Env Sci, NEC

(21-704 501-06-02) (21-790 797-00-00)

NGT 14-005-017 **University of Illinois - Urbana** **1972**
Training of graduate students in space-related science and technology

Period	Obligations
04/04/63-08/01/72	FY73: TOTAL: \$1,236,920
Prin. Invest.	NASA Tech. Officer CASE Category
Alpert, D.	HQ-PY/Carter, C. H. 99-Multi-Discip

(10-370 181-00-00)

INDIANA

NAS 1-12055 **Indiana University - Bloomington** **1973**
Study of bleed rates of chromatographic columns for use with the Martian GCMS

Period	Obligations
01/22/73-08/22/73	FY73: \$7,293 TOTAL: \$7,293
Prin. Invest.	NASA Tech. Officer CASE Category
Hayes, J. M.	LARC/Diaz, A. V. 13-Physics

(23-840 815-20-00)

NAS 5-21795 **Indiana University - Bloomington** **1974**
ERTS-A imagery related to mine safety

Period	Obligations
06/30/72-10/01/73	FY73: \$63,825 TOTAL: \$84,925
Prin. Invest.	NASA Tech. Officer CASE Category
	GSFC/ 32-Geological Sci

(51-680 641-14-03) (51-680 641-14-00)

NAS 9-9974 **Indiana University - Bloomington** **1975**
Lunar sample analysis

Period	Obligations
10/01/69-01/31/73	FY73: TOTAL: \$117,927
Prin. Invest.	NASA Tech. Officer CASE Category
Meinschein, W. G.	JSC/Harris, J. W. 12-Chemistry

(72-910 914-40-00)

NASW 2353 **Indiana University - Bloomington** **1976**
Regional dissemination center operation in aerospace research application center

Period	Obligations
05/16/72-12/01/72	FY73: TOTAL: \$239,000
Prin. Invest.	NASA Tech. Officer CASE Category
	HQ-KT/ 99-Multi-Discip

(10-250 141-93-00)

NASW 2467 **Indiana University - Bloomington** **1977**
Regional information dissemination center

Period	Obligations
05/14/73-12/31/74	FY73: \$221,000 TOTAL: \$221,000
Prin. Invest.	NASA Tech. Officer CASE Category
	HQ-KT/ 99-Multi-Discip

(10-250 141-93-01)

NGL 15-003-002 **Indiana University - Bloomington** **1978**
A theoretical investigation of the steady state interaction between radiation and matter in stellar atmospheres

Period	Obligations
07/17/63-12/31/76	FY73: \$14,384 TOTAL: \$328,177
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, H. R.	HQ-SG/Roman, N. G. 11-Astronomy
	HQ-SG/Kelsall, T.

(10-850 188-41-53) (10-850 188-00-00)

NASA'S UNIVERSITY PROGRAM **INDIANA (Continued)**

NGL 15-003-077 Indiana University - Bloomington 1979
An experimental study of hearing loss and inner ear damage after exposure to sounds of high intensity

Period	Obligations	
05/27/68-12/01/72	FY73: TOTAL: \$135,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Neff, W. D.	LARC/Cawthorn, J. M.	61-Biol Aspects
(10-770 127-00-00)	(23-770 127-00-00)	(23-770 127-51-17)

NGL 15-003-117 Indiana University - Bloomington 1980
Study of effects of a stressful or abnormal environment on action of selected therapeutic drugs

Period	Obligations	
05/19/72-04/30/76	FY73: \$52,083 TOTAL: \$165,467	
Prin. Invest.	NASA Tech. Officer	CASE Category
Maickel, R. P.	HQ-MM/Vinograd, S. P.	52-Clinical Med
(10-970 970-14-01)		

NGR 15-003-007 Indiana University - Bloomington 1981
Investigation of neurological correlates of information reception

Period	Obligations	
01/01/65-01/01/76	FY73: TOTAL: \$133,823	
Prin. Invest.	NASA Tech. Officer	CASE Category
Neff, W. D.	ARC/Weisman, N. W.	51-Biology
(10-870 189-00-00)	(21-870 189-00-00)	

NGR 15-003-105 Indiana University - Bloomington 1982
Lunar sample analysis

Period	Obligations	
01/26/71-01/31/74	FY73: \$40,000 TOTAL: \$103,300	
Prin. Invest.	NASA Tech. Officer	CASE Category
Meinschein, W. G.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 15-003-118 Indiana University - Bloomington 1983
Application of ultra-high sensitivity isotope ratio mass spectrometry to organic geochemistry and cosmochemistry

Period	Obligations	
06/20/72-05/31/74	FY73: \$43,716 TOTAL: \$73,716	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hayes, J. M.	HQ-SL/Geib, D. S.	12-Chemistry
(10-840 192-55-62)		

NAS 2-6802 Purdue University 1984
Study to assemble & analyze thermophysical properties of dielectric materials

Period	Obligations	
02/24/72-09/30/72	FY73: TOTAL: \$6,691	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dewitt, D. P.	ARC/Howe, J. T.	47-Materials Engr
Hernicz, R. S.	ARC/Green, M. J.	
(21-840 186-68-51)		

NAS 5-21773 Purdue University 1985
A study of the utilization of ERTS-A data from the Wabash River basin

Period	Obligations	
06/27/72-03/27/74	FY73: \$124,000 TOTAL: \$134,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
McDonald, R. B.	GSFC/Fihelly, A. W.	39-Env Sci, NEC
Landgrebe, D. A.		
(51-680 641-14-01)	(51-680 641-14-00)	

NAS 5-21785 Purdue University 1986
ERTS-A data analysis

Period	Obligations	
06/30/72-12/31/73	FY73: \$45,000 TOTAL: \$50,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Baumgardner, M. F.	GSFC/Fihelly, A. W.	19-Phys Sci, NEC
(51-680 641-14-01)	(51-680 641-14-00)	

NAS 5-21880 Purdue University 1987
Interdisciplinary analysis of ERTS data for Colorado mountain environments using ADP techniques

Period	Obligations	
06/30/72-02/28/74	FY73: \$159,000 TOTAL: \$166,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffer, R. M.	GSFC/Fihelly, A. W.	99-Multi-Discip
Melhorn, W. N.		
Frederking, R. L.		
(51-680 641-14-07)	(51-680 641-14-00)	

NAS 8-24015 Purdue University 1988
The study and classification of two and multi-component high thermal conductance devices

Period	Obligations	
03/21/69-12/01/71	FY73: TOTAL: \$31,381	
Prin. Invest.	NASA Tech. Officer	CASE Category
Schoenhals, R. J.	MSFC/Moss, J. D.	49-Engr, NEC
(62-742 124-00-00)		

NAS 9-10823 Purdue University 1989
Heating of food in modified atmospheres

Period	Obligations	
05/11/70-10/31/72	FY73: TOTAL: \$49,984	
Prin. Invest.	NASA Tech. Officer	CASE Category
Haugh, C. G.	JSC/Heidelbaugh, N. D.	59-Life Sci, NEC
(72-770 127-00-00)		

NAS 9-13301 Purdue University 1990
Study of utilization of EREP data from Wabash River basin

Period	Obligations	
05/07/73-05/31/74	FY73: \$97,160 TOTAL: \$97,160	
Prin. Invest.	NASA Tech. Officer	CASE Category
Silva, L. F.	JSC/Hicks, R. D.	39-Env Sci, NEC
(72-960 948-63-85)		

NAS 9-13380 Purdue University 1991
Description and interdisciplinary analysis of multispectral satellite data for selected cover types in Colorado mountains, using ADP techniques

Period	Obligations	
04/30/73-05/31/74	FY73: \$90,650 TOTAL: \$90,650	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffer, R. M.	JSC/Hicks, R.	39-Env Sci, NEC
(72-960 948-63-85)		

NGL 15-005-003 Purdue University 1992
Research on high precision spectroscopy with particular emphasis on the development of electronic digital computer methods

Period	Obligations	
10/01/62-01/01/75	FY73: \$15,000 TOTAL: \$589,068	
Prin. Invest.	NASA Tech. Officer	CASE Category
Andrew, K. L.	HQ-SG/Roman, N. G.	11-Astronomy
	HQ-SG/Oertel, G.	
(10-850 188-41-51)	(10-850 188-00-00)	

NASA'S UNIVERSITY PROGRAM **INDIANA (Continued)**

NGL 15-005-094 **Purdue University** **1993**
Aerodynamic problems related to jet powered VTOL aircraft

Period	Obligations	
03/18/69-07/01/73	FY73:	TOTAL: \$113,871
Prin. Invest.	NASA Tech. Officer	CASE Category
Skifstad, J. G.	LARC/Margason, R. J.	41-Aero Engr
(23-760 721-00-00)	(23-760 721-56-11)	(23-702 760-72-06)

NGR 15-005-106 **Purdue University** **2000**
Source encoding for two-dimensional data

Period	Obligations	
04/16/69-12/31/72	FY73:	TOTAL: \$109,150
Prin. Invest.	NASA Tech. Officer	CASE Category
Wintz, P. A.	GSFC/Lynch, T. J.	45-Elec Engr
(25-750 125-00-00)	(51-620 164-06-53)	(51-750 125-00-00)

NGL 15-005-112 **Purdue University** **1994**
Research in remote sensing in agriculture earth resources and mans environment

Period	Obligations	
06/21/69-05/01/75	FY73: \$1,560,872	TOTAL: \$5,321,896
Prin. Invest.	NASA Tech. Officer	CASE Category
Landgrebe, D. A.	JSC/Potter, A. E.	13-Physics
	HQ-PY/Vitale, J. A.	
(72-680 160-75-31)	(72-680 160-75-99)	(72-680 160-75-13)

NGR 15-005-119 **Purdue University** **2001**
Research on lift and viscous cross flow

Period	Obligations	
03/02/70-08/31/73	FY73:	TOTAL: \$62,535
Prin. Invest.	NASA Tech. Officer	CASE Category
Marshall, F. S.	LARC/Landrum, E. J.	41-Aero Engr
	LARC/Harris, J. E.	
(23-760 720-00-00)		

NGL 15-005-140 **Purdue University** **1995**
Origin of chondrites from relationships between fourteen key trace elements

Period	Obligations	
06/21/71-08/31/76	FY73: \$77,437	TOTAL: \$157,437
Prin. Invest.	NASA Tech. Officer	CASE Category
Lipschutz, M. E.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-MA/Pomeroy, J. H.	
(10-810 195-42-67)		

NGR 15-005-129 **Purdue University** **2002**
Investigation of nonequilibrium effects in an arc constrictor

Period	Obligations	
11/03/70-01/31/73	FY73:	TOTAL: \$15,444
Prin. Invest.	NASA Tech. Officer	CASE Category
Incropera, F. P.	ARC/Stine, H. A.	19-Phys Sci, NEC
(21-740 129-02-22)	(21-840 186-68-51)	

NGL 15-005-175 **Purdue University** **1996**
Lunar sample analysis

Period	Obligations	
02/01/73-01/31/76	FY73: \$92,290	TOTAL: \$92,290
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, L. A.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 15-005-147 **Purdue University** **2003**
Gas film cooling of turbine blades

Period	Obligations	
05/10/71-01/31/75	FY73:	TOTAL: \$50,149
Prin. Invest.	NASA Tech. Officer	CASE Category
Lecuyer, M. R.	LERC/Potter, D. J.	41-Aero Engr
(22-760 126-63-10)		

NGL 15-005-186 **Purdue University** **1997**
Application of remote sensing technology to solution of problems in management of resources

Period	Obligations	
06/19/73-05/31/76	FY73: \$395,000	TOTAL: \$395,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Landgrebe, D. A.	HQ-PY/Vitale, J. A.	39-Env Sci, NEC
(10-371 340-00-00)		

NGR 15-005-152 **Purdue University** **2004**
Efficient encoding of multispectral scanner data

Period	Obligations	
10/01/72-09/01/73	FY73: \$39,900	TOTAL: \$39,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Wintz, P. A.	GSFC/Alford, W. L.	45-Elec Engr
(51-680 160-20-59)		

NGR 15-005-058 **Purdue University** **1998**
Influence of high combustion pressure (4000) psia upon performance, heat flux, and combustion stability

Period	Obligations	
05/24/67-09/30/72	FY73:	TOTAL: \$286,603
Prin. Invest.	NASA Tech. Officer	CASE Category
Ehresman, C. M.	LERC/Priem, R. J.	46-Mech Engr
(10-710 128-00-00)	(22-710 128-00-00)	(22-710 113-31-08)

NGR 15-005-157 **Purdue University** **2005**
Lunar sample analysis

Period	Obligations	
03/01/72-01/31/74	FY73: \$15,000	TOTAL: \$49,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Meyer, H. O.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 15-005-069 **Purdue University** **1999**
Research in engineering design

Period	Obligations	
03/07/68-08/01/72	FY73:	TOTAL: \$223,540
Prin. Invest.	NASA Tech. Officer	CASE Category
Modrey, J.	HQ-PY/Vitale, J. A.	49-Engr, NEC
(10-370 183-00-00)		

NGR 15-005-162 **Purdue University** **2006**
Research and studies on calculation of flow in aircraft inlets by three-dimensional method of characteristics

Period	Obligations	
05/12/72-05/31/75	FY73:	TOTAL: \$49,973
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffman, J. D.	LERC/Anderson, B. H.	41-Aero Engr
(22-762 132-15-06)		

NASA'S UNIVERSITY PROGRAM
INDIANA (Continued)

NGR 15-005-164 **Purdue University** **2007**
Lunar sample analysis
Period 05/06/72-01/31/73 FY73: TOTAL: \$30,000
Prin. Invest. NASA Tech. Officer CASE Category
Taylor, L. A. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGR 15-005-174 **Purdue University** **2008**
Research on acoustic theory of turbulence
Period 04/03/73-03/31/73 FY73: \$18,806 TOTAL: \$18,806
Prin. Invest. NASA Tech. Officer CASE Category
LARC/ 13-Physics
(23-704 501-04-01)

NGR 15-005-180 **Purdue University** **2009**
Purdue-NASA cooperative program in computer-aided design and computer graphics
Period 05/10/73-05/31/76 FY73: \$170,000 TOTAL: \$170,000
Prin. Invest. NASA Tech. Officer CASE Category
Garrett, R. E. ARC/Gregory, T. J. 49-Engr, NEC
(21-704 501-15-81)

NGT 15-005-005 **Purdue University** **2010**
Training of graduate students in space-related science and technology
Period 03/27/63-08/01/72 FY73: TOTAL: \$1,162,090
Prin. Invest. NASA Tech. Officer CASE Category
Andrews, F. N. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NGT 15-005-061 **Purdue University** **2011**
Training of predoctoral graduate students in engineering design as related to aeronautical and space technology
Period 06/06/67-08/01/72 FY73: TOTAL: \$333,000
Prin. Invest. NASA Tech. Officer CASE Category
Waling, J. L. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NSR 15-005-037 **Purdue University** **2012**
Compilation and analysis of thermal radiative properties
Period 06/29/66-12/31/72 FY73: TOTAL: \$354,117
Prin. Invest. NASA Tech. Officer CASE Category
Dewitt, D. P. HQ-RV/Mark, C. P. 46-Mech Engr
(10-742 124-00-00)

NAS 3-17357 **Rose-Hulman Institute of Technology** **2013**
Analysis of test data from an elasto-hydrodynamic film thickness apparatus
Period 03/21/73-12/20/73 FY73: \$2,000 TOTAL: \$2,000
Prin. Invest. NASA Tech. Officer CASE Category
Coy, J. J. LERC/Dietrich, M. W. 46-Mech Engr
(22-704 501-24-10)

NGR 15-008-008 **Rose-Hulman Institute of Technology** **2014**
Analysis of a turbulent boundary layer over a moving ground plane
Period 03/04/70-08/30/72 FY73: TOTAL: \$14,231
Prin. Invest. NASA Tech. Officer CASE Category
Roper, A. T. LARC/Gentry, G. L., Jr. 41-Aero Engr
LARC/Margason, R. J.
(23-760 126-00-00) (23-702 760-76-02) (23-760 126-63-11)

NAS 1-12468 **University of Notre Dame** **2015**
Investigation of electrode materials used in charge coupled devices
Period 06/04/73-09/04/73 FY73: \$5,381 TOTAL: \$5,381
Prin. Invest. NASA Tech. Officer CASE Category
Gajda, W. J., Jr. LARC/Fripp, A. L. 45-Elec Engr
LARC/Stermer, R. L.
(23-704 502-03-52)

NAS 8-25601 **University of Notre Dame** **2016**
Characteristics of separate flow regions within altitude compensating nozzles
Period 02/19/70-08/31/72 FY73: TOTAL: \$50,224
Prin. Invest. NASA Tech. Officer CASE Category
Mueller, T. J. MSFC/Gross, K. W. 46-Mech Engr
MSFC/Strong, J. S.
(62-710 128-00-00) (62-710 113-31-12)

NGL 15-004-026 **University of Notre Dame** **2017**
Convolutional coding techniques for data protection
Period 09/11/67-09/01/73 FY73: \$34,500 TOTAL: \$168,922
Prin. Invest. NASA Tech. Officer CASE Category
Massey, J. L. GSFC/Rochelle, R. W. 45-Elec Engr
(51-620 164-18-54) (51-840 823-11-00)

NGT 15-004-002 **University of Notre Dame** **2018**
Training of graduate students in space-related science and technology
Period 03/27/63-08/01/72 FY73: TOTAL: \$759,816
Prin. Invest. NASA Tech. Officer CASE Category
Beichner, P. E. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

IOWA

NGL 16-002-005 **Iowa State University** **2019**
Application of blade element techniques to design and performance prediction problems for axial flow pumps
Period 02/16/60-08/01/72 FY73: TOTAL: \$264,302
Prin. Invest. NASA Tech. Officer CASE Category
Serovy, G. K. LERC/Britsch, W. R. 41-Aero Engr
(10-710 128-00-00) (22-710 128-00-00) (22-710 113-31-09)

NASA'S UNIVERSITY PROGRAM
IOWA (Continued)

<p>NGR 16-002-029 Iowa State University 2020 Numerical calculation of flow fields behind rectangular wings</p> <p><i>Period</i> <i>Obligations</i> 06/22/70-12/31/72 FY73: TOTAL: \$45,901</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Vogel, J. M. ARC/Kutler, P. 41-Aero Engr (21-760 136-13-05) (21-740 129-00-00)</p>	<p>NAS 2-6064 University of Iowa 2027 Study of the necessity of gravity for normal growth of turtles</p> <p><i>Period</i> <i>Obligations</i> 08/04/70-07/01/72 FY73: TOTAL: \$51,450</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Wunder, C. C. ARC/Schillinger, G. 51-Biology (21-870 189-00-00) (21-970 970-21-61) (21-870 883-00-00)</p>
<p>NGR 16-002-036 Iowa State University 2021 Study on deviation angle prediction for axial-flow compressor blade sections</p> <p><i>Period</i> <i>Obligations</i> 05/11/71-09/30/73 FY73: TOTAL: \$44,633</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Serovy, G. K. LERC/Sandercock, D. M. 41-Aero Engr (22-760 126-63-10)</p>	<p>NAS 2-6553 University of Iowa 2028 Pioneer F/G data analysis - Jovian charged particles experiment</p> <p><i>Period</i> <i>Obligations</i> 07/21/71-06/30/73 FY73: \$45,368 TOTAL: \$116,768</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Van Allen, J. A. ARC/Hall, C. F. 13-Physics (21-840 811-22-00)</p>
<p>NGR 16-002-038 Iowa State University 2022 Calculation of viscous compressible flow</p> <p><i>Period</i> <i>Obligations</i> 10/07/71-11/14/73 FY73: \$16,177 TOTAL: \$31,622</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Tannehill, J. C. ARC/Rakich, J. V. 21-Mathematics (21-704 502-37-01)</p>	<p>NAS 5-9074 University of Iowa 2029 Low energy particle detector experiment</p> <p><i>Period</i> <i>Obligations</i> 12/31/64-09/30/74 FY73: TOTAL: \$567,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Frank, L. A. GSFC/Ferer, B. H. 13-Physics Van Allen, J. A. (51-850 861-00-00) (51-850 861-32-00)</p>
<p>NGT 16-002-002 Iowa State University 2023 Training of graduate students in space-related science and technology</p> <p><i>Period</i> <i>Obligations</i> 03/29/63-08/01/72 FY73: TOTAL: \$1,032,163</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Zaffarano, D. J. HQ-PY/Carter, C. H. 99-Multi-Discip (10-370 181-00-00)</p>	<p>NAS 5-11039 University of Iowa 2030 IMP-1 low energy electron and proton experiment</p> <p><i>Period</i> <i>Obligations</i> 06/19/68-06/30/74 FY73: \$18,000 TOTAL: \$313,700</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Frank, L. A. GSFC/Davis, M. A. 13-Physics (51-850 861-52-00)</p>
<p>NAS 1-8141 University of Iowa 2024 Post-launch, experimenters' data reduction and analysis for Injun-Explorer, mission C</p> <p><i>Period</i> <i>Obligations</i> 06/18/68-09/01/72 FY73: TOTAL: \$644,375</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Van Allen, J. A. LARC/Bowker, D. E. 11-Astronomy (23-850 863-00-00) (23-850 863-11-00)</p>	<p>NAS 5-11064 University of Iowa 2031 Low energy electrons and protons experiment for IMP-H & J</p> <p><i>Period</i> <i>Obligations</i> 05/31/68-01/31/75 FY73: \$105,000 TOTAL: \$433,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Frank, L. A. GSFC/Limberis, B. R. 13-Physics (51-850 861-42-00)</p>
<p>NAS 1-11257 University of Iowa 2025 Design, development, fabrication, testing and launch support of the Injun F spacecraft</p> <p><i>Period</i> <i>Obligations</i> 03/17/72-08/01/74 FY73: \$2,260,000 TOTAL: \$2,860,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Van Allen, J. A. LARC/Coffee, C. W., Jr. 13-Physics (23-850 863-11-00) LARC/Woerner, C. V.</p>	<p>NAS 5-11074 University of Iowa 2032 Low-frequency radio noise experiment</p> <p><i>Period</i> <i>Obligations</i> 04/19/68-06/30/74 FY73: \$71,016 TOTAL: \$527,016</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Gurnett, D. A. GSFC/Madden, J. S. 13-Physics Pfeiffer, G. W. (51-850 861-52-00)</p>
<p>NAS 2-5603 University of Iowa 2026 Geiger tube telescope</p> <p><i>Period</i> <i>Obligations</i> 06/27/69-04/30/73 FY73: \$50,000 TOTAL: \$558,000</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Van Allen, J. A. ARC/Hall, C. F. 13-Physics (21-840 811-22-00)</p>	<p>NAS 5-11167 University of Iowa 2033 AC electric fields experiment for S3A</p> <p><i>Period</i> <i>Obligations</i> 09/25/68-06/30/73 FY73: \$35,000 TOTAL: \$296,300</p> <p><i>Prin. Invest.</i> <i>NASA Tech. Officer</i> <i>CASE Category</i> Gurnett, D. A. GSFC/Longanecker, G. W. 13-Physics (51-850 857-12-00)</p>

NASA'S UNIVERSITY PROGRAM
IOWA (Continued)

NAS 5-11265 **University of Iowa** **2034**
UK-4 low energy proton and electron differential energy analyzer experiment

<i>Period</i>	<i>Obligations</i>	
01/30/70-08/31/73	FY73: \$38,000	TOTAL: \$390,394
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Frank, L. A.	GSFC/Eaker, H. L.	13-Physics
Craven, J. D.		
Yeager, D. M.		
(51-850 870-42-00)		

NAS 5-11279 **University of Iowa** **2035**
Solar wind plasma wave experiment for the Helios missions

<i>Period</i>	<i>Obligations</i>	
03/30/70-03/15/75	FY73: \$283,000	TOTAL: \$874,645
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gurnett, D. A.	GSFC/Ousley, G. W.	11-Astronomy
	GSFC/White, C. E.	
(51-840 823-12-00)		

NAS 5-11431 **University of Iowa** **2036**
AC electric and magnetic fields experiment

<i>Period</i>	<i>Obligations</i>	
05/21/71-06/30/75	FY73: \$100,000	TOTAL: \$290,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gurnett, D. A.	GSFC/Davis, M. A.	13-Physics
Pfeiffer, G. W.		
(51-850 861-42-00)		

NAS 5-21852 **University of Iowa** **2037**
Evaluation of ERTS imagery for tectonic analysis

<i>Period</i>	<i>Obligations</i>	
09/15/72-08/01/74	FY73: \$29,786	TOTAL: \$29,786
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoppin, R. A.	GSFC/Stonesifer, G. R.	32-Geological Sci
Baker, R. G.		
(51-680 641-14-03)		

NAS 5-23112 **University of Iowa** **2038**
Cosmic X-ray experiment

<i>Period</i>	<i>Obligations</i>	
05/09/72-03/07/73	FY73: \$24,198	TOTAL: \$24,198
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Van Allen, J. A.	GSFC/Jones, S. L.	41-Aero Engr
(51-850 821-32-00)		

NAS 9-1208 **University of Iowa** **2039**
Analysis of electroencephalogram

<i>Period</i>	<i>Obligations</i>	
05/01/66-06/01/77	FY73: \$8,040	TOTAL: \$8,040
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	MSFC/	51-Biology
(62-990 923-00-00)		

NAS 9-13313 **University of Iowa** **2040**
Investigation of Skylab data EREP no. 393

<i>Period</i>	<i>Obligations</i>	
03/09/73-12/31/74	FY73: \$17,000	TOTAL: \$17,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hoppin, R. A.	JSC/Miller, M.	32-Geological Sci
(72-960 948-63-83)		

NGL 16-001-002 **University of Iowa** **2041**
Theoretical & experimental studies related to particles & fields associated with major bodies of solar system & with interplanetary space

<i>Period</i>	<i>Obligations</i>	
05/23/62-11/30/75	FY73: \$250,000	TOTAL: \$3,854,196
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Van Allen, J. A.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 188-36-55)	(10-850 188-00-00)	(10-850 385-00-00)

NGL 16-001-043 **University of Iowa** **2042**
Waves in plasmas

<i>Period</i>	<i>Obligations</i>	
03/28/67-11/30/75	FY73: \$60,000	TOTAL: \$522,986
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Montgomery, D. C.	HQ-SG/Schmerling, E. R.	13-Physics
	HQ-SG/Hallenbeck, D. R.	
(10-850 188-36-56)		

NGR 16-001-031 **University of Iowa** **2043**
Physiological & developmental changes resulting from reduced gravitational force with animals chronically adjusted to centrifugal fields

<i>Period</i>	<i>Obligations</i>	
08/01/67-08/31/73	FY73: \$19,000	TOTAL: \$124,209
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wunder, C. C.	ARC/Oyama, J.	51-Biology
(21-970 970-21-61)		

NGR 16-001-094 **University of Iowa** **2044**
Fundamental spectrophotometry of major planets

<i>Period</i>	<i>Obligations</i>	
06/04/70-06/30/73	FY73: \$9,215	TOTAL: \$9,215
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Neff, J. A.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-00-00)		

NGR 16-001-102 **University of Iowa** **2045**
Physical properties of the outer planets and their satellites

<i>Period</i>	<i>Obligations</i>	
06/07/71-05/31/72	FY73: \$14,620	TOTAL: \$14,620
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Neff, J. F.	HQ-SL/Brunk, W. E.	11-Astronomy
Fix, J. D.	HQ-SL/Fellows, R. F.	
(10-840 196-41-80)		

NGT 16-001-004 **University of Iowa** **2046**
Training of graduate students in space-related science and technology

<i>Period</i>	<i>Obligations</i>	
04/01/62-08/01/72	FY73: \$1,200,019	TOTAL: \$1,200,019
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spriesterbach, D. C.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NASA'S UNIVERSITY PROGRAM

KANSAS

KANSAS		University of Kansas		2053
NAS 9-13271		Skylab study of water quality		
Period		Obligations		
02/23/73-12/31/74		FY73: \$22,500		TOTAL: \$22,500
Prin. Invest.		NASA Tech. Officer		CASE Category
Yarger, H. L.		JSC/White, T. J.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13273		University of Kansas		2054
Investigation of Skylab data EREP no. 540A				
Period		Obligations		
03/19/73-08/31/74		FY73: \$61,168		TOTAL: \$61,168
Prin. Invest.		NASA Tech. Officer		CASE Category
Eagleman, J. R.		JSC/Kirby, R.		19-Phys Sci, NEC
(72-960 948-63-82)				
NAS 9-13331		University of Kansas		2055
Investigation of Skylab data EREP no. 549M				
Period		Obligations		
03/26/73-09/30/74		FY73: \$70,283		TOTAL: \$70,283
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/White, T. T.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13347		University of Kansas		2056
Engineering & scientific support to S193 radiometer/scatterometer				
Period		Obligations		
02/12/73-09/30/74		FY73: \$130,000		TOTAL: \$130,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Dell, M. E.		49-Engr, NEC
(72-960 948-80-81)		JSC/Howard, C. E.		
NGL 17-002-001		University of Kansas		2057
Stimulating & promoting space related research within facility & research staff, & providing guest lectures, seminars & symposia				
Period		Obligations		
08/21/62-03/01/73		FY73:		TOTAL: \$950,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Barr, B. G.		HQ-PY/Redding, E. R.		99-Multi-Discip
(10-370 183-00-00)		HQ-PY/Quinn, H. B.		
NAS 9-10261		University of Kansas		2051
Radar systems studies				
Period		Obligations		
01/12/70-06/30/74		FY73: \$114,000		TOTAL: \$886,223
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Potter, A. E.		45-Elec Engr
(72-680 160-75-10)		(72-680 160-75-13)		(72-680 160-75-57)
NAS 9-12061		University of Kansas		2052
Radiometer/scatterometer support for Skylab				
Period		Obligations		
06/28/71-02/15/73		FY73: \$35,000		TOTAL: \$158,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Eichelman, W. F.		31-Atmos Sci
(72-960 948-80-81)				
NAS 9-13271		University of Kansas		2053
Skylab study of water quality				
Period		Obligations		
02/23/73-12/31/74		FY73: \$22,500		TOTAL: \$22,500
Prin. Invest.		NASA Tech. Officer		CASE Category
Yarger, H. L.		JSC/White, T. J.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13273		University of Kansas		2054
Investigation of Skylab data EREP no. 540A				
Period		Obligations		
03/19/73-08/31/74		FY73: \$61,168		TOTAL: \$61,168
Prin. Invest.		NASA Tech. Officer		CASE Category
Eagleman, J. R.		JSC/Kirby, R.		19-Phys Sci, NEC
(72-960 948-63-82)				
NAS 9-13331		University of Kansas		2055
Investigation of Skylab data EREP no. 549M				
Period		Obligations		
03/26/73-09/30/74		FY73: \$70,283		TOTAL: \$70,283
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/White, T. T.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13347		University of Kansas		2056
Engineering & scientific support to S193 radiometer/scatterometer				
Period		Obligations		
02/12/73-09/30/74		FY73: \$130,000		TOTAL: \$130,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Dell, M. E.		49-Engr, NEC
(72-960 948-80-81)		JSC/Howard, C. E.		
NGL 17-002-001		University of Kansas		2057
Stimulating & promoting space related research within facility & research staff, & providing guest lectures, seminars & symposia				
Period		Obligations		
08/21/62-03/01/73		FY73:		TOTAL: \$950,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Barr, B. G.		HQ-PY/Redding, E. R.		99-Multi-Discip
(10-370 183-00-00)		HQ-PY/Quinn, H. B.		
NAS 9-10261		University of Kansas		2051
Radar systems studies				
Period		Obligations		
01/12/70-06/30/74		FY73: \$114,000		TOTAL: \$886,223
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Potter, A. E.		45-Elec Engr
(72-680 160-75-10)		(72-680 160-75-13)		(72-680 160-75-57)
NAS 9-12061		University of Kansas		2052
Radiometer/scatterometer support for Skylab				
Period		Obligations		
06/28/71-02/15/73		FY73: \$35,000		TOTAL: \$158,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Eichelman, W. F.		31-Atmos Sci
(72-960 948-80-81)				
NAS 9-13271		University of Kansas		2053
Skylab study of water quality				
Period		Obligations		
02/23/73-12/31/74		FY73: \$22,500		TOTAL: \$22,500
Prin. Invest.		NASA Tech. Officer		CASE Category
Yarger, H. L.		JSC/White, T. J.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13273		University of Kansas		2054
Investigation of Skylab data EREP no. 540A				
Period		Obligations		
03/19/73-08/31/74		FY73: \$61,168		TOTAL: \$61,168
Prin. Invest.		NASA Tech. Officer		CASE Category
Eagleman, J. R.		JSC/Kirby, R.		19-Phys Sci, NEC
(72-960 948-63-82)				
NAS 9-13331		University of Kansas		2055
Investigation of Skylab data EREP no. 549M				
Period		Obligations		
03/26/73-09/30/74		FY73: \$70,283		TOTAL: \$70,283
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/White, T. T.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13347		University of Kansas		2056
Engineering & scientific support to S193 radiometer/scatterometer				
Period		Obligations		
02/12/73-09/30/74		FY73: \$130,000		TOTAL: \$130,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Dell, M. E.		49-Engr, NEC
(72-960 948-80-81)		JSC/Howard, C. E.		
NGL 17-002-001		University of Kansas		2057
Stimulating & promoting space related research within facility & research staff, & providing guest lectures, seminars & symposia				
Period		Obligations		
08/21/62-03/01/73		FY73:		TOTAL: \$950,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Barr, B. G.		HQ-PY/Redding, E. R.		99-Multi-Discip
(10-370 183-00-00)		HQ-PY/Quinn, H. B.		
NAS 9-10261		University of Kansas		2051
Radar systems studies				
Period		Obligations		
01/12/70-06/30/74		FY73: \$114,000		TOTAL: \$886,223
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Potter, A. E.		45-Elec Engr
(72-680 160-75-10)		(72-680 160-75-13)		(72-680 160-75-57)
NAS 9-12061		University of Kansas		2052
Radiometer/scatterometer support for Skylab				
Period		Obligations		
06/28/71-02/15/73		FY73: \$35,000		TOTAL: \$158,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Eichelman, W. F.		31-Atmos Sci
(72-960 948-80-81)				
NAS 9-13271		University of Kansas		2053
Skylab study of water quality				
Period		Obligations		
02/23/73-12/31/74		FY73: \$22,500		TOTAL: \$22,500
Prin. Invest.		NASA Tech. Officer		CASE Category
Yarger, H. L.		JSC/White, T. J.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13273		University of Kansas		2054
Investigation of Skylab data EREP no. 540A				
Period		Obligations		
03/19/73-08/31/74		FY73: \$61,168		TOTAL: \$61,168
Prin. Invest.		NASA Tech. Officer		CASE Category
Eagleman, J. R.		JSC/Kirby, R.		19-Phys Sci, NEC
(72-960 948-63-82)				
NAS 9-13331		University of Kansas		2055
Investigation of Skylab data EREP no. 549M				
Period		Obligations		
03/26/73-09/30/74		FY73: \$70,283		TOTAL: \$70,283
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/White, T. T.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13347		University of Kansas		2056
Engineering & scientific support to S193 radiometer/scatterometer				
Period		Obligations		
02/12/73-09/30/74		FY73: \$130,000		TOTAL: \$130,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Dell, M. E.		49-Engr, NEC
(72-960 948-80-81)		JSC/Howard, C. E.		
NGL 17-002-001		University of Kansas		2057
Stimulating & promoting space related research within facility & research staff, & providing guest lectures, seminars & symposia				
Period		Obligations		
08/21/62-03/01/73		FY73:		TOTAL: \$950,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Barr, B. G.		HQ-PY/Redding, E. R.		99-Multi-Discip
(10-370 183-00-00)		HQ-PY/Quinn, H. B.		
NAS 9-10261		University of Kansas		2051
Radar systems studies				
Period		Obligations		
01/12/70-06/30/74		FY73: \$114,000		TOTAL: \$886,223
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Potter, A. E.		45-Elec Engr
(72-680 160-75-10)		(72-680 160-75-13)		(72-680 160-75-57)
NAS 9-12061		University of Kansas		2052
Radiometer/scatterometer support for Skylab				
Period		Obligations		
06/28/71-02/15/73		FY73: \$35,000		TOTAL: \$158,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Eichelman, W. F.		31-Atmos Sci
(72-960 948-80-81)				
NAS 9-13271		University of Kansas		2053
Skylab study of water quality				
Period		Obligations		
02/23/73-12/31/74		FY73: \$22,500		TOTAL: \$22,500
Prin. Invest.		NASA Tech. Officer		CASE Category
Yarger, H. L.		JSC/White, T. J.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13273		University of Kansas		2054
Investigation of Skylab data EREP no. 540A				
Period		Obligations		
03/19/73-08/31/74		FY73: \$61,168		TOTAL: \$61,168
Prin. Invest.		NASA Tech. Officer		CASE Category
Eagleman, J. R.		JSC/Kirby, R.		19-Phys Sci, NEC
(72-960 948-63-82)				
NAS 9-13331		University of Kansas		2055
Investigation of Skylab data EREP no. 549M				
Period		Obligations		
03/26/73-09/30/74		FY73: \$70,283		TOTAL: \$70,283
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/White, T. T.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13347		University of Kansas		2056
Engineering & scientific support to S193 radiometer/scatterometer				
Period		Obligations		
02/12/73-09/30/74		FY73: \$130,000		TOTAL: \$130,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Dell, M. E.		49-Engr, NEC
(72-960 948-80-81)		JSC/Howard, C. E.		
NGL 17-002-001		University of Kansas		2057
Stimulating & promoting space related research within facility & research staff, & providing guest lectures, seminars & symposia				
Period		Obligations		
08/21/62-03/01/73		FY73:		TOTAL: \$950,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Barr, B. G.		HQ-PY/Redding, E. R.		99-Multi-Discip
(10-370 183-00-00)		HQ-PY/Quinn, H. B.		
NAS 9-10261		University of Kansas		2051
Radar systems studies				
Period		Obligations		
01/12/70-06/30/74		FY73: \$114,000		TOTAL: \$886,223
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Potter, A. E.		45-Elec Engr
(72-680 160-75-10)		(72-680 160-75-13)		(72-680 160-75-57)
NAS 9-12061		University of Kansas		2052
Radiometer/scatterometer support for Skylab				
Period		Obligations		
06/28/71-02/15/73		FY73: \$35,000		TOTAL: \$158,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Eichelman, W. F.		31-Atmos Sci
(72-960 948-80-81)				
NAS 9-13271		University of Kansas		2053
Skylab study of water quality				
Period		Obligations		
02/23/73-12/31/74		FY73: \$22,500		TOTAL: \$22,500
Prin. Invest.		NASA Tech. Officer		CASE Category
Yarger, H. L.		JSC/White, T. J.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13273		University of Kansas		2054
Investigation of Skylab data EREP no. 540A				
Period		Obligations		
03/19/73-08/31/74		FY73: \$61,168		TOTAL: \$61,168
Prin. Invest.		NASA Tech. Officer		CASE Category
Eagleman, J. R.		JSC/Kirby, R.		19-Phys Sci, NEC
(72-960 948-63-82)				
NAS 9-13331		University of Kansas		2055
Investigation of Skylab data EREP no. 549M				
Period		Obligations		
03/26/73-09/30/74		FY73: \$70,283		TOTAL: \$70,283
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/White, T. T.		19-Phys Sci, NEC
(72-960 948-63-86)				
NAS 9-13347		University of Kansas		2056
Engineering & scientific support to S193 radiometer/scatterometer				
Period		Obligations		
02/12/73-09/30/74		FY73: \$130,000		TOTAL: \$130,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Dell, M. E.		49-Engr, NEC
(72-960 948-80-81)		JSC/Howard, C. E.		
NGL 17-002-001		University of Kansas		2057
Stimulating & promoting space related research within facility & research staff, & providing guest lectures, seminars & symposia				
Period		Obligations		
08/21/62-03/01/73		FY73:		TOTAL: \$950,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Barr, B. G.		HQ-PY/Redding, E. R.		99-Multi-Discip
(10-370 183-00-00)		HQ-PY/Quinn, H. B.		
NAS 9-10261		University of Kansas		2051
Radar systems studies				
Period		Obligations		
01/12/70-06/30/74		FY73: \$114,000		TOTAL: \$886,223
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.		JSC/Potter, A. E.		45-Elec Engr
(72-680 160-75-10)		(72-680 160-75-13)		(72-680 160-75-57)
NAS 9-12061		University of Kansas		2052
Radiometer/scatterometer support for Skylab				
Period		Obligations		
06/28/71-02/15/73		FY73: \$35,000		TOTAL: \$158,000
Prin. Invest.		NASA Tech. Officer		CASE Category
Moore, R. K.				

NASA'S UNIVERSITY PROGRAM KANSAS (Continued)

NGR 17-002-052 **University of Kansas** **2060**
Phase II (project implementation), NASA traineeships in engineering design

Period	FY73:	Obligations
05/02/68-10/31/72		TOTAL: \$135,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Vitale, J. A.	HQ-PY/	49-Engr, NEC

(10-370 183-00-00)

NGR 17-002-071 **University of Kansas** **2061**
Parametric investigation of planform and aeroelastic effects on aerodynamics center a- and q-stability derivatives

Period	FY73:	Obligations
09/16/69-01/31/73		TOTAL: \$92,590
Prin. Invest.	NASA Tech. Officer	CASE Category
Roskam, J.	LARC/Lamar, J. E.	41-Aero Engr

(23-760 126-00-00) (23-765 742-73-01) (23-760 126-13-10)

NGR 17-002-072 **University of Kansas** **2062**
Investigation of improved control method for light and general aviation aircraft

Period	FY73:	Obligations
10/22/69-12/31/73	\$176,149	TOTAL: \$406,007
Prin. Invest.	NASA Tech. Officer	CASE Category
Kohlman, D. L.	LARC/Crane, H. L.	41-Aero Engr

(23-702 760-60-01) (23-760 736-05-10) (23-760 736-00-00)

NGR 17-002-079 **University of Kansas** **2063**
Investigation of aircraft traffic operations & procedures in a high density terminal area

Period	FY73:	Obligations
10/22/70-02/28/73	\$1,530	TOTAL: \$41,994
Prin. Invest.	NASA Tech. Officer	CASE Category
Lenzen, K. H.	LARC/Walsh, T. M.	41-Aero Engr

(23-702 768-81-01) (23-760 126-61-13)

NGR 17-002-089 **University of Kansas** **2064**
A laser atmospheric pollution study

Period	FY73:	Obligations
01/14/72-12/31/72		TOTAL: \$53,291
Prin. Invest.	NASA Tech. Officer	CASE Category
Zeller, E. J.	LARC/Lawrence, J. D.	31-Atmos Sci

(23-980 975-61-75) LARC/Cocke, B. W.

NGR 17-002-095 **University of Kansas** **2065**
Investigation of separate surface stability augmentation systems for general aviation aircraft

Period	FY73:	Obligations
08/31/71-08/31/73	\$145,534	TOTAL: \$186,573
Prin. Invest.	NASA Tech. Officer	CASE Category
Roskam, J.	FRC/Loschke, P. C.	41-Aero Engr

(24-702 760-60-05) (24-704 501-23-21)

NGR 17-002-107 **University of Kansas** **2066**
Analytical investigation of wing-jet interaction

Period	FY73:	Obligations
01/01/73-12/31/73	\$18,413	TOTAL: \$18,413
Prin. Invest.	NASA Tech. Officer	CASE Category
Lan, C. T.	LARC/Campbell, J. F.	41-Aero Engr

(23-704 501-06-01) LARC/Lamar, J. E.

NGR 17-004-027 **University of Kansas** **2067**
Application of composite materials to aircraft structures

Period	FY73:	Obligations
05/18/72-04/30/75	\$13,000	TOTAL: \$23,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lenzen, K. H.	LARC/Pride, R. A.	41-Aero Engr

(23-704 501-22-03) LARC/Dexter, H. B.

NGT 17-002-006 **University of Kansas** **2068**
Training of graduate students in space-related science and technology

Period	FY73:	Obligations
03/21/63-08/01/72		TOTAL: \$712,390
Prin. Invest.	NASA Tech. Officer	CASE Category
Ellermeier, R. D.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NGT 17-002-044 **University of Kansas** **2069**
Training of predoctoral graduate students in the field of engineering design

Period	FY73:	Obligations
04/21/67-08/01/72		TOTAL: \$273,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, W. P.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NGR 17-003-018 **Wichita State University** **2070**
Numerical methods for the investigation of transmission and attenuation of sound in acoustically treated ducts

Period	FY73:	Obligations
07/24/72-02/01/75	\$49,420	TOTAL: \$49,420
Prin. Invest.	NASA Tech. Officer	CASE Category
Eversman, W.	LERC/Rice, E. J.	13-Physics

(22-704 501-04-01) LERC/Feiler, C. E.

NGR 17-003-020 **Wichita State University** **2071**
Study of the vortex lift of cambered delta wings

Period	FY73:	Obligations
04/20/72-12/31/72		TOTAL: \$2,972
Prin. Invest.	NASA Tech. Officer	CASE Category
Snyder, M. H.	LARC/Lamar, J. E.	41-Aero Engr

(23-760 136-13-01) LARC/Polhamus, E. C.

KENTUCKY

NAS 9-12749 **University of Kentucky** **2072**
Feasibility study of limb volume measuring systems

Period	FY73:	Obligations
06/05/72-05/01/74	\$49,269	TOTAL: \$98,319
Prin. Invest.	NASA Tech. Officer	CASE Category
Carter, W. M.	JSC/Hoffler, G. W.	46-Mech Engr

(72-970 970-53-30)

NASA'S UNIVERSITY PROGRAM **KENTUCKY (Continued)**

NGL 18-001-003 **University of Kentucky** **2073**
Experimental investigation of gravity level preference in small animals

<i>Period</i>		<i>Obligations</i>
05/01/63-01/31/74	FY73:	TOTAL: \$1,314,146
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lange, K. O.	HQ-MM/Belleville, R. E.	61-Biol Aspects
(10-870 189-00-00)	(21-870 189-00-00)	(21-860 849-00-00)

NGL 18-001-042 **University of Kentucky** **2074**
Investigation of the role of ion impurities in mechanical failures

<i>Period</i>		<i>Obligations</i>
04/18/69-05/31/76	FY73: \$21,000	TOTAL: \$106,606
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leipold, M. H.	LERC/Sanders, W. A.	47-Materials Engr
(22-704 501-01-06)	(10-740 129-00-00)	(22-740 134-03-20)

NGR 18-001-035 **University of Kentucky** **2075**
Study of interacting effects of geometry and gravity upon the peak and minimum boiling heat fluxes

<i>Period</i>		<i>Obligations</i>
09/13/67-12/31/72	FY73: \$150	TOTAL: \$116,495
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lienhard, J. H.	LERC/Cochran, T. H.	13-Physics
	LERC/Masica, W. J.	
(22-710 113-31-16)		

NGR 18-001-058 **University of Kentucky** **2076**
Lunar sample analysis

<i>Period</i>		<i>Obligations</i>
01/12/71-01/31/74	FY73: \$31,800	TOTAL: \$91,380
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ehmann, W. D.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 18-001-060 **University of Kentucky** **2077**
Lunar sample analysis

<i>Period</i>		<i>Obligations</i>
01/07/71-01/31/74	FY73: \$22,240	TOTAL: \$83,810
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Birkebah, R. C.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 18-001-068 **University of Kentucky** **2078**
Effects of background gravity stimuli on gravity controlled behavior

<i>Period</i>		<i>Obligations</i>
09/23/71-09/01/75	FY73:	TOTAL: \$97,246
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCoy, D. F.	ARC/Anliker, J. E.	61-Biol Aspects
(21-970 970-21-53)		

LOUISIANA

NGR 19-015-001 **Dillard University** **2079**
Feasibility study of utilization of remote aerial sensing for predicting urban neighborhood characteristics

<i>Period</i>		<i>Obligations</i>
05/31/72-06/30/74	FY73: \$20,000	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rogers, R.	HQ-PY/Pohly, J. G.	39-Env Sci, NEC
	MSFC/Daniels, J. L., Jr.	
(10-371 340-00-00)		

NGR 19-011-007 **Grambling College** **2080**
Study of low frequency hydromagnetic waves using ATS 1 data

<i>Period</i>		<i>Obligations</i>
11/30/70-11/31/73	FY73: \$11,943	TOTAL: \$35,351
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cummings, W. D.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 385-36-00)		

NGR 19-011-008 **Grambling College** **2081**
Effect of continuous low-dose rate gamma irradiation on cell population kinetics of lymphoid tissue

<i>Period</i>		<i>Obligations</i>
05/03/71-08/31/73	FY73:	TOTAL: \$16,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Foster, B. R.	JSC/Lewallen, J. M.	59-Life Sci, NEC
	JSC/Benson, R. E.	
(10-371 340-00-00)		

NGR 19-011-009 **Grambling College** **2082**
Time exposure studies on stress corrosion cracking of aluminum

<i>Period</i>		<i>Obligations</i>
04/06/71-05/31/73	FY73:	TOTAL: \$31,125
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Terrell, J.	HQ-PY/Pohly, J. G.	13-Physics
	MSFC/McKannan, E. C.	
(62-910 933-50-00)	(10-371 340-00-00)	

NGR 19-011-012 **Grambling College** **2083**
Theoretical investigation of isotopic anomaly of xenon in carbonaceous chondrites

<i>Period</i>		<i>Obligations</i>
04/24/72-08/31/75	FY73: \$21,539	TOTAL: \$33,540
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sabu, D. D.	HQ-PY/Pohly, J. G.	43-Chem Engr
	JSC/Bogard, D. D.	
(10-371 340-00-00)		

NGR 19-011-013 **Grambling College** **2084**
Study of polarizations for hydromagnetic waves observed by ATS-1

<i>Period</i>		<i>Obligations</i>
04/24/72-12/31/73	FY73:	TOTAL: \$9,267
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gajendar, N.	HQ-PY/Pohly, J. G.	31-Atmos Sci
(10-371 340-00-00)		

NASA'S UNIVERSITY PROGRAM
LOUISIANA (Continued)

NGR 19-011-014 **Grambling College** **2085**
 Study of coronal structures in a nonmagnetic star
Period *Obligations*
 07/05/72-05/01/73 FY73: \$9,515 TOTAL: \$9,515
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Cross, M. A. HQ-PY/Pohly, J. G. 13-Physics
 JSC/Bonner, G.
 (10-371 340-00-00)

NGR 19-011-016 **Grambling College** **2086**
 Distribution of extra-ionic electrons in semimetallic environments
 by nuclear quadrupole resonance techniques
Period *Obligations*
 11/14/72-12/01/73 FY73: \$15,305 TOTAL: \$15,305
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Narasimhamurty H, A. HQ-PY/Pohly, J. G. 13-Physics
 MSFC/Kroes, R. L.
 (10-371 340-00-00)

NAS 1-10341 **Louisiana State University - Baton Rouge** **2087**
 Practical application of computer programs for supersonic
 combustion
Period *Obligations*
 09/14/70-12/01/71 FY73: TOTAL: \$24,053
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Groves, F. R. LARC/Anderson, G. Y. 49-Engr, NEC
 (23-760 722-03-11)

NAS 5-11426 **Louisiana State University - Baton Rouge** **2088**
 Ionization spectrometer study of phase B definition for the
 HEAO-A spacecraft
Period *Obligations*
 04/27/71-08/01/72 FY73: TOTAL: \$124,847
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Huggett, R. W. GSFC/Browning, R. K. 11-Astronomy
 GSFC/Ormes, J. F.
 (51-850 832-12-00)

NAS 5-23174 **Louisiana State University - Baton Rouge** **2089**
 HEAO-A experiment
Period *Obligations*
 12/05/72-08/01/74 FY73: \$75,000 TOTAL: \$75,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Huggett, R. W. GSFC/Browning, R. K. 11-Astronomy
 GSFC/Janniche, P. A.
 (51-850 832-12-00)

NAS 8-20003 **Louisiana State University - Baton Rouge** **2090**
 Study of the economic impact of NASA operations on the
 metropolitan area of New Orleans
Period *Obligations*
 10/01/65-10/01/76 FY73: TOTAL: \$4,806
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 MSFC/ 72-Economics
 (62-910 933-31-00)

NAS 8-29012 **Louisiana State University - Baton Rouge** **2091**
 Application of Saturn/Apollo automated data system capabilities
 to problems of environmental impacts of urban transportation
Period *Obligations*
 06/06/72-06/05/73 FY73: TOTAL: \$4,822
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Modlin, D. G., Jr. MSFC/McDonough, G. F. 39-Env Sci, NEC
 MSFC/Daniels, J. L., Jr.
 (62-910 933-50-00)

NAS 9-10986 **Louisiana State University - Baton Rouge** **2092**
 Monte Carlo simulation of nuclear electromagnetic cascade
 development and energy of ionization spectrometers
Period *Obligations*
 06/16/70-06/30/73 FY73: TOTAL: \$52,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Jones, W. V. JSC/Craddock, W. 13-Physics
 JSC/Eandi, R. D.
 (72-910 914-50-00) (72-850 188-00-00)

NAS 9-12352 **Louisiana State University - Baton Rouge** **2093**
 Shuttle oriented graduate program
Period *Obligations*
 12/07/71-06/01/74 FY73: \$10,000 TOTAL: \$35,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Daniel, L. R., Jr. JSC/Teixeira, C. 41-Aero Engr
 Courter, R. W. JSC/Moseley, W. M.
 Miller, P. H.
 (72-960 961-21-00) (72-910 914-50-00)

NGL 19-001-024 **Louisiana State University - Baton Rouge** **2094**
 Multidisciplinary research in space science and engineering
Period *Obligations*
 10/21/66-08/01/73 FY73: TOTAL: \$624,224
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Whitehurst, C. A. HQ-PY/Quinn, H. B. 49-Engr, NEC
 HQ-PY/Redding, E. R.
 (10-370 183-00-00)

NGL 19-001-059 **Louisiana State University - Baton Rouge** **2095**
 Analysis of the interaction of ablating protection systems and
 stagnation-region heading
Period *Obligations*
 01/14/69-12/01/72 FY73: TOTAL: \$186,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Pike, R. W. LARC/Swann, R. T. 49-Engr, NEC
 (23-742 124-00-00)

NGL 19-001-068 **Louisiana State University - Baton Rouge** **2096**
 Special support of Saturn/Apollo utilizing Mississippi test
 facilities
Period *Obligations*
 02/07/69-01/01/73 FY73: TOTAL: \$275,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Whitehurst, C. A. LARC/Johnson, D. L. 49-Engr, NEC
 (62-910 933-50-00)

NASA'S UNIVERSITY PROGRAM **LOUISIANA (Continued)**

NGL 19-001-097 Louisiana State University - Baton Rouge 2097
Interdisciplinary program in earth resource and environmental research

Period	Obligations
05/17/71-08/01/74	FY73: TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer
Whitehurst, C. A.	HQ-PY/Redding, E. R.39-Env Sci, NEC
	MSFC/Kent, M. I.
(10-371 340-00-00)	

NGL 19-001-105 Louisiana State University - Baton Rouge 2098
Interpretation of remote sensing data in the Bayou la Fourche region of South Louisiana

Period	Obligations
04/06/72-05/01/75	FY73: TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer
Whitehurst, C. A.	HQ-PY/Vitale, J. A. 39-Env Sci, NEC
	MTF/Mooneyhan, D. W.
(10-371 340-00-00)	

NGR 19-001-012 Louisiana State University - Baton Rouge 2099
Cosmic ray investigations utilizing an emulsion chamber-calorimeter combination

Period	Obligations
03/10/66-12/31/72	FY73: \$100,000 TOTAL: \$919,957
Prin. Invest.	NASA Tech. Officer
Huggett, R. W.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Kavanagh, L. D.
(10-850 188-46-52)	

NGR 19-001-085 Louisiana State University - Baton Rouge 2100
Application and interpretation of aperture

Period	Obligations
06/10/70-06/01/73	FY73: \$1,000 TOTAL: \$60,787
Prin. Invest.	NASA Tech. Officer
Wilkins, B.	JSC/Kimzey, S. L. 51-Biology
(72-970 970-51-15)	(72-910 914-50-00)

NAS 8-28955 Louisiana State University - New Orleans 2101
Application of Saturn/Apollo automated data system capabilities to problems of the environmental impacts of urban transportation

Period	Obligations
06/06/72-08/31/73	FY73: TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer
Saussy, G. A.	MSFC/McDonough, G. F.
Hammond, J.	39-Env Sci, NEC
	MSFC/Daniels, J. L., Jr.
(62-910 933-50-00)	

NAS 9-11339 Louisiana State University - New Orleans 2102
Analysis of plant tissues

Period	Obligations
10/15/70-08/31/72	FY73: TOTAL: \$64,939
Prin. Invest.	NASA Tech. Officer
Laseter, J. L.	JSC/Walkinshaw, C. H. 51-Biology
	JSC/Wooley, B. G.
(72-910 914-50-00)	(72-870 189-00-00) (72-870 189-54-07)

NAS 9-12941 Louisiana State University - New Orleans 2103
Analysis of chemical components from tissue samples

Period	Obligations
06/29/72-08/31/73	FY73: \$25,000 TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer
Laseter, J. L.	JSC/Walkinshaw, C. H. 51-Biology
	JSC/Wooley, B. C.
(72-960 961-51-00)	

NAS 9-9317 Louisiana State University - Shreveport 2104
Study of modulatory effects of solar wind in galactic cosmic rays

Period	Obligations
04/07/69-06/30/74	FY73: \$3,700 TOTAL: \$28,960
Prin. Invest.	NASA Tech. Officer
Moss, T. A.	JSC/Giuli, R. T. 11-Astronomy
(72-850 188-41-51)	(72-950 951-16-00)

NAS 8-28957 Loyola University - Louisiana 2105
Study of applications of Saturn/Apollo automated data system capabilities to the problems of environmental impacts of urban transportation

Period	Obligations
06/23/72-06/22/73	FY73: TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer
Christman, J. F.	MSFC/McDonough, G. F. 39-Env Sci, NEC
	MSFC/Smollen, J. W., III
(62-910 933-50-00)	

NGR 19-013-002 Northwestern State University - Louisiana 2106
Geologic mapping of Mars

Period	Obligations
11/09/71-09/01/73	FY73: TOTAL: \$3,500
Prin. Invest.	NASA Tech. Officer
Dehon, R. A.	HQ-SL/Dwornik, S. E. 32-Geological Sci
	HQ-SL/Allingham, J. W.
(10-840 384-50-80)	

NGR 19-005-003 Southern University A&M Col - Baton Rouge 2107

Experimental and theoretical study on nonequilibrium and unsteady phenomena in supersonic gas dynamics

Period	Obligations
01/20/71-01/31/75	FY73: TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer
Johnson, J. A.	HQ-PY/Pohly, J. G. 13-Physics
	MSFC/Jones, J.
(10-371 340-00-00)	(62-910 933-50-00)

NGR 19-005-006 Southern University A&M Col - Baton Rouge 2108

Research in the many-particle theory of nuclear systems with application to neutron star matter

Period	Obligations
10/17/72-09/01/73	FY73: \$15,000 TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer
Chakkalakal, D. A.	HQ-PY/Pohly, J. G. 11-Astronomy
	JPL/King, J.
(10-371 340-00-00)	

NASA'S UNIVERSITY PROGRAM LOUISIANA (Continued)

NGR 19-005-008 Southern University A&M Col - Baton Rouge 2109
Comparison of zone radiometry and enthalpy probe measurements
Period 07/20/72-12/31/73 *Obligations* FY73: \$15,157 TOTAL: \$15,157
Prin. Invest. NASA Tech. Officer CASE Category
Watson, M. M. HQ-PY/Pohly, J. G. 43-Chem Engr
MSFC/Kent, M. I.
(10-371 340-00-00)

NGR 19-005-009 Southern University A&M Col - Baton Rouge 2110
Radiative property investigation
Period 03/26/73-05/31/74 *Obligations* FY73: \$20,000 TOTAL: \$20,000
Prin. Invest. NASA Tech. Officer CASE Category
HQ-PY/ 13-Physics
(10-371 340-00-00)

NGR 19-014-001 Southern University A&M Col - New Orleans 2111
Evaluation of secondary data as a guide to the systematic transportation analysis and research project of New Orleans
Period 05/16/72-05/30/73 *Obligations* FY73: TOTAL: \$5,000
Prin. Invest. NASA Tech. Officer CASE Category
Lucas, E. C. HQ-PY/Pohly, J. G. 39-Env Sci, NEC
MSFC/McDonnough, G.
(10-371 340-00-00)

NAS 8-29026 Tulane University 2112
Research study on an assessment of the usefulness of remote sensing techniques in determining quality of urban environment
Period 06/15/72-06/14/73 *Obligations* FY73: TOTAL: \$45,000
Prin. Invest. NASA Tech. Officer CASE Category
Hidalgo, J. V. MSFC/McDonough, G. F. 39-Env Sci, NEC
MSFC/Daniels, J. L., Jr.
(62-910 933-50-00)

NAS 9-12966 Tulane University 2113
East Lake Pontchartrain study
Period 06/26/72-06/30/73 *Obligations* FY73: TOTAL: \$35,000
Prin. Invest. NASA Tech. Officer CASE Category
JSC/Tilton, E. L. 33-Oceanography
(72-680 160-75-85)

NGL 19-002-027 Tulane University 2114
Electronic transport properties of molecular crystals
Period 02/17/69-01/31/76 *Obligations* FY73: \$22,000 TOTAL: \$122,000
Prin. Invest. NASA Tech. Officer CASE Category
Hermann, A. M. HQ-RW/Weinberg, I. 13-Physics
JPL/Rembaum, A.
(10-704 502-01-02) (10-740 129-00-00)

NGR 19-002-030 Tulane University 2115
Determination of the intensity of turbulence in liquid rocket combustion chamber
Period 12/31/69-12/31/73 *Obligations* FY73: \$20,000 TOTAL: \$100,227
Prin. Invest. NASA Tech. Officer CASE Category
O'Hara, J. C. LERC/Priem, R. J. 46-Mech Engr
(22-704 502-04-25)

NGR 19-002-032 Tulane University 2116
Investigation of sediments on the Martian surface based on Mariner 6 and 7 photographs
Period 10/02/70-04/01/73 *Obligations* FY73: TOTAL: \$12,390
Prin. Invest. NASA Tech. Officer CASE Category
Parsley, R. L. HQ-SL/Dwornik, S. E. 32-Geological Sci
HQ-SL/Morris, E. C.
(10-840 384-50-80)

NGR 19-002-038 Tulane University 2117
Geologic mapping of a quadrangle on Mars based on Mariner 9 photographs
Period 02/04/72-03/31/73 *Obligations* FY73: TOTAL: \$15,000
Prin. Invest. NASA Tech. Officer CASE Category
Meyer, J. D. HQ-SL/Dwornik, S. E. 32-Geological Sci
HQ-SL/Allingham, J. W.
(10-840 384-50-80)

NGT 19-002-002 Tulane University 2118
Training of graduate students in space-related science and technology
Period 04/12/63-08/01/72 *Obligations* FY73: TOTAL: \$793,798
Prin. Invest. NASA Tech. Officer CASE Category
Deener, D. R. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NGR 19-007-002 Xavier University - Louisiana 2119
Xavier university and the systematic analysis research project
Period 05/22/72-12/31/73 *Obligations* FY73: \$20,000 TOTAL: \$25,000
Prin. Invest. NASA Tech. Officer CASE Category
Fulwiler, J. H. HQ-PY/Carter, C. H. 76-Sociology
MSFC/McDonough, G.
(10-371 340-00-00)

NGR 19-007-004 Xavier University - Louisiana 2120
The correlation of the 24 hour pattern of rat plasma and adrenal corticosterone with the diurnal variations of certain tissue constituents involved in carbohydrate metabolism
Period 05/07/73-06/30/74 *Obligations* FY73: \$39,438 TOTAL: \$39,438
Prin. Invest. NASA Tech. Officer CASE Category
Ashman, P. U. ARC/Winget, C. M. 59-Life Sci, NEC
ARC/Vernikosdaneli, J.
(10-371 340-00-00)

NASA'S UNIVERSITY PROGRAM

MAINE

NGR 20-006-016 **University of Maine - Orono** **2121**
Studies of electron transport and localized states, and amorphous semiconductors

Period	FY73:	Obligations	TOTAL:
03/25/70-06/01/72			\$71,978
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Clark, A. H.	HQ-RW/Weinberg, I.	13-Physics	
	JPL/Lewicki, G.		
(10-740 129-02-21)	(10-740 129-00-00)		

MARYLAND

NAS 5-21418 **Bowie State College** **2122**
Summer institute in computer applications

Period	FY73:	Obligations	TOTAL:
06/21/71-08/01/71			\$29,984
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
	GSFC/	21-Mathematics	
(51-500 311-02-31)	(51-500 311-07-31)	(51-620 682-10-60)	

NAS 5-22066 **Bowie State College** **2123**
Summer institute in computer applications

Period	FY73:	Obligations	TOTAL:
06/22/72-08/20/72			\$29,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bannister, P. J.	GSFC/Bremer, H. O.	21-Mathematics	
(51-500 311-02-31)	(51-500 311-07-41)	(51-890 697-00-00)	

NGR 21-027-001 **Bowie State College** **2124**
Research in cosmic ray physics

Period	FY73:	Obligations	TOTAL:
09/01/69-02/82/73	\$52,642		\$94,884
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Thornabene, H. S.	GSFC/McDonald, F. B.	11-Astronomy	
	GSFC/Boldt, E. A.		
(51-850 188-41-59)	(51-850 188-00-00)	(10-370 183-00-00)	

NGR 21-027-004 **Bowie State College** **2125**
Research in numerical integration

Period	FY73:	Obligations	TOTAL:
05/25/71-09/30/74	\$13,239		\$23,451
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Srivastava, S.	HQ-PY/Pohly, J. G.	21-Mathematics	
	GSFC/Velez, C. E.		
(10-371 340-00-00)			

NGR 21-027-010 **Bowie State College** **2126**
Holographic gratings for spectrographic applications study of aberrations

Period	FY73:	Obligations	TOTAL:
05/14/73-06/30/74	\$14,402		\$14,402
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bhatia, M. S.	GSFC/Caruso, A. J.	13-Physics	
(10-371 340-00-00)			

NGT 21-027-009 **Bowie State College** **2127**
Summer Institute in computer applications

Period	FY73:	Obligations	TOTAL:
04/09/73-01/31/74	\$33,040		\$33,040
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
	HQ-PY/	21-Mathematics	
(10-371 340-00-00)			

NGR 21-023-001 **Columbia Union College** **2128**
Research in calibration techniques for radiometric devices

Period	FY73:	Obligations	TOTAL:
05/07/68-12/31/72			\$38,096
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mohr, E. I.	GSFC/McLean, J. T.	13-Physics	
(51-680 160-00-00)	(51-680 160-44-56)	(51-680 160-75-51)	

NAS 5-11415 **Johns Hopkins University** **2129**
Atmosphere Explorer photoelectron and energetic particle experiment

Period	FY73:	Obligations	TOTAL:
06/22/71-06/30/74	\$230,000		\$570,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Doering, J. P.	GSFC/Findlay, J. A.	31-Atmos Sci	
	GSFC/Grimes, D. W.		
(51-850 852-22-00)			

NAS 5-22071 **Johns Hopkins University** **2130**
Environmental and toxicological evaluation of plasticizer migration

Period	FY73:	Obligations	TOTAL:
06/20/72-06/01/74			\$20,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rubin, R. J.	GSFC/Gross, F. C.	53-Other Medical	
	GSFC/Friedman, D. S.		
(51-250 141-93-00)			

NAS 9-11528 **Johns Hopkins University** **2131**
Apollo far UV spectrometer

Period	FY73:	Obligations	TOTAL:
02/11/71-12/31/73	\$801,324		\$4,194,324
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fastie, W. G.	JSC/McFadin, L. B.	13-Physics	
(72-910 914-49-00)			

NGR 21-001-001 **Johns Hopkins University** **2132**
Rocket and laboratory experiments and analysis on ultraviolet spectra of upper atmosphere

Period	FY73:	Obligations	TOTAL:
08/01/61-08/31/73	\$240,000		\$3,121,963
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fastie, W. G.	HQ-SG/Dubin, M.	19-Phys Sci, NEC	
	HQ-SG/Roman, N. G.		
(10-850 879-11-00)			

NGR 21-001-024 **Johns Hopkins University** **2133**
Solar radio observations in support of Skylab-A

Period	FY73:	Obligations	TOTAL:
06/26/72-09/30/73			\$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gotwols, B. L.	MSFC/Baugher, C. R.	11-Astronomy	
	MSFC/Duncan, B. J.		
(62-960 996-00-00)			

NASA'S UNIVERSITY PROGRAM
MARYLAND (Continued)

NGR 21-001-037 **Johns Hopkins University** **2134**
Ammonia and nitrogen in primitive atmospheres
Period *Obligations*
10/16/68-02/28/73 FY73: TOTAL: \$69,886
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Eugster, H. P. HQ-SL/Young, R. S. 12-Chemistry
(10-870 189-00-00) (10-840 192-55-62)

NGR 21-001-080 **Johns Hopkins University** **2135**
Statistical models of lunar rocks and regolith
Period *Obligations*
06/15/71-08/31/73 FY73: TOTAL: \$38,887
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Marcus, A. H. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Allenby, R. J.
(10-810 383-09-50) (10-810 195-42-65)

NGR 21-001-084 **Johns Hopkins University** **2136**
Spectra and energy levels of neodymium ions
Period *Obligations*
12/31/69-12/31/72 FY73: TOTAL: \$45,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Crosswhite, H. M. HQ-SG/Bogges, N. W. 11-Astronomy
HQ-SG/Roman, N. G.
(10-850 188-41-57) (10-850 188-00-00)

NGR 21-001-097 **Johns Hopkins University** **2137**
Phase of the Grand Tour missions energetic particle investigations for outer planet missions
Period *Obligations*
04/07/71-10/01/72 FY73: TOTAL: \$46,272
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Krimigis, S. M. HQ-SL/Mitz, M. A. 13-Physics
HQ-SL/Keller, J. W.
(10-840 186-68-68) (10-840 186-68-52)

NGR 21-001-107 **Johns Hopkins University** **2138**
Man-environment social systems research
Period *Obligations*
09/23/71-04/15/72 FY73: TOTAL: \$46,794
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Findley, J. D. ARC/Patton, R. M. 62-Social Aspects
Brady, J. D.
(21-970 970-21-51)

NGR 21-001-111 **Johns Hopkins University** **2139**
Small group performance & effects of contingency management in a programmed environment
Period *Obligations*
03/31/72-10/14/73 FY73: \$159,600 TOTAL: \$255,255
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Findley, J. D. ARC/Patton, R. M. 62-Social Aspects
(21-970 970-21-51)

NGR 21-001-119 **Johns Hopkins University** **2140**
Feasibility study for a charge composition Explorer satellite-light ion release experiment
Period *Obligations*
04/26/73-04/30/74 FY73: \$50,000 TOTAL: \$50,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
HQ-SG/ 32-Geological Sci
(10-850 188-36-55)

NGR 21-009-033 **Johns Hopkins University** **2141**
Optical investigations of noncrystalline semiconductors
Period *Obligations*
02/12/70-02/01/73 FY73: TOTAL: \$65,750
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Feldman, C. HQ-RW/Weinberg, I. 13-Physics
JPL/Lewicki, G.
(10-740 129-02-21) (10-740 129-00-00)

NGT 21-001-004 **Johns Hopkins University** **2142**
Training of graduate students in space-related science and technology
Period *Obligations*
03/20/63-08/01/72 FY73: TOTAL: \$877,915
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kimball, A. W. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NSR 21-001-077 **Johns Hopkins University** **2143**
Collecting, cataloging, indexing and storing personal and professional papers of Dr Hugh Latimer Dryden
Period *Obligations*
12/21/70-07/31/73 FY73: TOTAL: \$71,783
Prin. Invest. *NASA Tech. Officer* *CASE Category*
HQ-AA/Emme, E. M. 73-History
(10-250 141-00-00) (10-705 130-00-00) (10-370 183-00-00)

NGT 21-025-006 **Morgan State College** **2144**
Summer faculty fellowship program
Period *Obligations*
04/16/71-03/31/74 FY73: \$55,416 TOTAL: \$110,416
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Proctor, N. K. HQ-PY/Pohly, J. G. 19-Phys Sci, NEC
GSFC/Mundy, J. R.
(51-030 039-00-00) (10-371 340-00-00)

NGR 21-002-010 **University of Maryland - Baltimore County** **2145**
Theoretical & experimental research on gravitational radiation
Period *Obligations*
06/12/63-09/01/73 FY73: \$28,075 TOTAL: \$910,223
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Misner, C. W. HQ-SG/Kelsall, T. 11-Astronomy
HQ-SG/Roman, N. G.
(10-850 188-41-54) (10-840 185-00-00)

NGR 21-002-040 **University of Maryland - Baltimore County** **2146**
Study of protein hydration in isolated cell surface structure
Period *Obligations*
01/19/65-06/30/71 FY73: \$10,000 TOTAL: \$242,114
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Grenell, R. G. HQ-ER/Jacobs, G. J. 51-Biology
(10-870 189-57-62) (10-870 191-58-62)

NAS 5-11063 **University of Maryland - College Park** **2147**
Experiment to analyze ions and electrons for IMP-H & J
Period *Obligations*
06/11/68-06/30/75 FY73: \$210,000 TOTAL: \$1,357,200
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gloeckler, G. GSFC/Davis, M. A. 13-Physics
(51-850 861-42-00)

NASA'S UNIVERSITY PROGRAM **MARYLAND (Continued)**

NAS 5-23237 University of Maryland - College Park 2148
Feasibility study for infrared interferometer, spectrometer, & radiometer for Mariner/Jupiter 1977 launch

Period	Obligations	
05/09/73-08/31/73	FY73: \$4,500	TOTAL: \$4,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Ponnamperuma, C.	GSFC/Conrath, B. J.	12-Chemistry
(51-840 802-31-00)		

NAS 9-5886 University of Maryland - College Park 2149
Lunar gravimeter experiment for ALSEP

Period	Obligations	
04/26/66-02/28/74	FY73: \$300,000	TOTAL: \$2,161,615
Prin. Invest.	NASA Tech. Officer	CASE Category
Weber, J.	JSC/Eichelman, W. F.	19-Phys Sci, NEC
(72-910 914-40-00)		

NGL 21-002-005 University of Maryland - College Park 2150
Theoretical research on dynamics of astrophysical plasmas including studies of structure of plasma shock waves in solar corona and their possible radio emission

Period	Obligations	
02/01/62-06/01/74	FY73: \$50,000	TOTAL: \$674,946
Prin. Invest.	NASA Tech. Officer	CASE Category
Tidman, D. A.	HQ-SG/Kavanagh, L. D.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 188-36-55)		

NGL 21-002-008 University of Maryland - College Park 2151
Multidisciplinary research on application of high speed computers to space-related research problems

Period	Obligations	
04/03/63-02/01/73	FY73:	TOTAL: \$2,620,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rheindolt, W. C.	HQ-PY/Quinn, H. B.	99-Multi-Discip
	HQ-PY/Redding, E. R.	
(10-370 183-00-00)		

NGL 21-002-029 University of Maryland - College Park 2152
Cooperative research in long wavelength radio astronomy

Period	Obligations	
02/01/64-02/01/73	FY73:	TOTAL: \$506,677
Prin. Invest.	NASA Tech. Officer	CASE Category
Erickson, W. C.	GSFC/Fainberg, J.	11-Astronomy
Kundu, M. R.	GSFC/Alexander, J.	
(51-850 188-00-00)	(51-850 188-41-52)	(51-850 877-00-00)

NGL 21-002-033 University of Maryland - College Park 2153
Theoretical and experimental studies in space sciences, including consideration of rocket probe and satellites techniques

Period	Obligations	
06/02/64-05/30/76	FY73: \$255,588	TOTAL: \$2,179,537
Prin. Invest.	NASA Tech. Officer	CASE Category
Laster, H.	GSFC/Abid, G. E.	31-Atmos Sci
Smith, E. P.	GSFC/Pieper, G. F.	
(51-840 196-41-51)	(51-840 811-22-00)	(51-840 820-02-00)

NGL 21-002-167 University of Maryland - College Park 2154
Optical absorption coefficients for uranium plasma

Period	Obligations	
04/26/68-06/30/73	FY73:	TOTAL: \$130,319
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, M. H.	LERC/Patch, R. W.	13-Physics
Wilkerson, T. D.		
(22-720 122-00-00)	(45-720 122-00-00)	

NGL 21-002-214 University of Maryland - College Park 2155
Study of general relativity effects on tracking data

Period	Obligations	
04/11/69-01/01/73	FY73:	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Richard, J. P.	GSFC/Ghaffari, A.	42-Astro Engr
	GSFC/Schmid, P. E.	
(51-750 125-00-00)		

NGL 21-002-367 University of Maryland - College Park 2156
Multifrequency mapping of the radio sun

Period	Obligations	
10/01/72-09/01/74	FY73: \$202,000	TOTAL: \$202,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Kundu, M. R.	GSFC/Fainberg, J.	11-Astronomy
Erickson, W. C.		
(51-850 188-38-51)		

NGR 21-002-002 University of Maryland - College Park 2157
Theoretical studies in atmospheric and space physics

Period	Obligations	
02/01/60-09/30/73	FY73: \$30,000	TOTAL: \$637,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Opik, E. J.	HQ-SG/Dubin, M.	11-Astronomy
	HQ-SL/Brunk, W. E.	
(10-850 188-45-51)		

NGR 21-002-003 University of Maryland - College Park 2158
Psychophysiology in controlled environments

Period	Obligations	
04/01/70-03/01/73	FY73:	TOTAL: \$836,492
Prin. Invest.	NASA Tech. Officer	CASE Category
Melnik, W. L.	HQ-MM/Saunders, J. F.	41-Aero Engr
(10-870 189-00-00)	(21-870 189-54-62)	(21-980 945-82-00)

NGR 21-002-007 University of Maryland - College Park 2159
Research on measurement of atomic transition probabilities of high temperature cases

Period	Obligations	
03/20/63-10/31/73	FY73: \$20,000	TOTAL: \$288,024
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, M. H.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-53)		

NGR 21-002-066 University of Maryland - College Park 2160
A study of primary cosmic ray electrons, utilizing balloon-borne experiments

Period	Obligations	
11/19/65-06/30/73	FY73: \$85,000	TOTAL: \$640,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Earl, J. A.	HQ-SG/Opp, A. G.	11-Astronomy
	HQ-SG/Kavanagh, L. D.	
(10-850 188-46-51)		

NGR 21-002-073 University of Maryland - College Park 2161
Experimental and theoretical investigation of plasma radiation

Period	Obligations	
04/26/66-02/28/74	FY73: \$50,000	TOTAL: \$547,005
Prin. Invest.	NASA Tech. Officer	CASE Category
Griem, H. R.	HQ-SG/Roman, N. G.	11-Astronomy
	HQ-SG/Kelsall, T.	
(10-850 188-41-51)	(10-850 188-00-00)	

NASA'S UNIVERSITY PROGRAM MARYLAND (Continued)

NGR 21-002-096 University of Maryland - College Park 2162 Research in atmospheric physics

Period	Obligations	
06/21/66-12/31/73	FY73: \$70,000	TOTAL: \$424,414
Prin. Invest.	NASA Tech. Officer	CASE Category
Matthews, D. L.	GSFC/Brace, L. H.	31-Atmos Sci
	GSFC/Taylor, H. A.	
(51-850 188-36-56)	(51-840 384-47-51)	(51-850 872-12-00)

NGR 21-002-197 University of Maryland - College Park 2163 Analysis of data processing systems.

Period	Obligations	
10/01/68-06/30/73	FY73:	TOTAL: \$115,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Chu, Y.	GSFC/Grunby, E. I.	21-Mathematics
Minher, J.		
(51-500 150-00-00)	(51-500 150-22-38)	(51-500 150-22-15)

NGR 21-002-199 University of Maryland - College Park 2164 Research in solar radio astronomy at short wavelengths

Period	Obligations	
04/11/69-09/30/73	FY73: \$17,000	TOTAL: \$74,156
Prin. Invest.	NASA Tech. Officer	CASE Category
Kunder, M. R.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-52)		

NGR 21-002-206 University of Maryland - College Park 2165 Study of a unified hardware software design of a microprogrammed system

Period	Obligations	
05/05/69-08/31/72	FY73:	TOTAL: \$50,201
Prin. Invest.	NASA Tech. Officer	CASE Category
Chu, Y.	GSFC/Greene, E. P.	21-Mathematics
(51-750 125-00-00)	(25-750 125-00-00)	

NGR 21-002-216 University of Maryland - College Park 2166 Investigation and possible improvements of the life limiting factors in the sealed off CO2 gas laser discharge

Period	Obligations	
10/17/69-06/01/72	FY73:	TOTAL: \$53,311
Prin. Invest.	NASA Tech. Officer	CASE Category
Hochuli, U. E.	GSFC/Richard, H. L.	13-Physics
	GSFC/McGinigal, T. E.	
(51-620 164-21-57)	(51-750 125-00-00)	(51-620 630-22-00)

NGR 21-002-218 University of Maryland - College Park 2167 Research on the optical pumping of alkali atoms using coherent radiation from semiconductor injection lasers

Period	Obligations	
05/23/69-06/01/72	FY73:	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Alley, C. O.	GSFC/Major, F. G.	13-Physics
(51-750 125-00-00)	(51-750 125-21-06)	

NGR 21-002-219 University of Maryland - College Park 2168 Measurement of molecular densities of the mesosphere by means of optical radar

Period	Obligations	
07/31/69-09/30/73	FY73:	TOTAL: \$55,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Poultney, S. K.	HQ-SG/Dubin, M.	31-Atmos Sci
(10-850 188-45-52)	(10-850 188-00-00)	

NGR 21-002-224 University of Maryland - College Park 2169 Research on the measurements of the charge and isotopic composition

Period	Obligations	
07/31/69-08/31/73	FY73: \$33,000	TOTAL: \$123,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Gloeckler, G.	HQ-SG/Opp, A. G.	11-Astronomy
	HQ-SG/Kavanagh, L. D.	
(10-850 188-46-51)		

NGR 21-002-229 University of Maryland - College Park 2170 Multi-residue codes for self-correcting arithmetic units

Period	Obligations	
01/01/70-08/15/72	FY73:	TOTAL: \$40,235
Prin. Invest.	NASA Tech. Officer	CASE Category
Rao, T. R.	GSFC/Schaefer, D. H.	45-Elec Engr
(51-750 125-23-10)	(51-750 125-00-00)	

NGR 21-002-266 University of Maryland - College Park 2171 Theoretical study of two problems concerning curved laminar jets

Period	Obligations	
03/19/70-08/14/73	FY73:	TOTAL: \$35,526
Prin. Invest.	NASA Tech. Officer	CASE Category
Plotkin, A.	ARC/Corsiglia, V. R.	41-Aero Engr
(21-760 136-13-01)	(21-760 126-00-00)	

NGR 21-002-267 University of Maryland - College Park 2172 Supervision of the laser ranging at McDonald Observatory

Period	Obligations	
04/03/70-03/31/73	FY73: \$15,890	TOTAL: \$475,251
Prin. Invest.	NASA Tech. Officer	CASE Category
Currie, D. G.	HQ-SM/Strickland, A. T.	13-Physics
(10-810 195-43-50)		

NGR 21-002-270 University of Maryland - College Park 2173 Research in mechanical theorem proving

Period	Obligations	
05/18/70-06/30/74	FY73: \$25,000	TOTAL: \$63,439
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, J.	HQ-RE/Pontious, C. E.	21-Mathematics
	JPL/Zmuidzinas, J. S.	
(10-704 502-03-32)	(10-750 115-04-60)	(21-740 129-04-21)

NGR 21-002-285 University of Maryland - College Park 2174 Research on techniques for laser ranging to optical ratio-reflectors on the moon

Period	Obligations	
11/02/70-09/30/73	FY73: \$100,000	TOTAL: \$317,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Alley, C. O.	HQ-MT/Redfield, M.	19-Phys Sci, NEC
	HQ-MT/Markey, M. F.	
(10-980 908-94-24)		

NGR 21-002-291 University of Maryland - College Park 2175 Studies of charged particles in natural and laboratory environments

Period	Obligations	
01/28/71-08/31/73	FY73: \$22,860	TOTAL: \$63,377
Prin. Invest.	NASA Tech. Officer	CASE Category
Coplan, M. A.	GSFC/Ogilvie, K. W.	13-Physics
(51-850 188-36-55)		

NASA'S UNIVERSITY PROGRAM **MARYLAND (Continued)**

NGR 21-002-296 University of Maryland - College Park 2176
Studies of shock wave propagation on the lunar surface

Period	Obligations	
05/05/71-05/00/72	FY73: TOTAL: \$42,500	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pai, S. I.	HQ-SM/Bryson, R. P.	31-Atmos Sci
Greenberg, J. S.	GSFC/Okeefe, J. A.	
Hazelrigg, G. A.		
(10-810 195-42-65)		

NGR 21-002-301 University of Maryland - College Park 2177
Development and application of an interferometer to measure binary separations and determination of stellar masses in spectroscopic binaries

Period	Obligations	
03/10/71-12/31/73	FY73: \$30,000 TOTAL: \$67,866	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Currie, D. G.	HQ-SG/Bogges, N. W.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-41-51)		

NGR 21-002-303 University of Maryland - College Park 2178
Experimental studies of three dimensional turbulent boundary layers

Period	Obligations	
04/22/71-08/31/73	FY73: TOTAL: \$25,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Melnik, W. L.	HQ-RA/Gessow, A.	13-Physics
(10-740 129-01-20)		

NGR 21-002-308 University of Maryland - College Park 2179
Rocket investigation of relativistic electron

Period	Obligations	
06/21/71-08/31/72	FY73: TOTAL: \$150,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Matthews, D. L.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Holtz, J. R.	
(10-850 879-11-00)		

NGR 21-002-311 University of Maryland - College Park 2180
Solar wind ions

Period	Obligations	
06/09/71-03/31/72	FY73: TOTAL: \$25,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilkerson, T. D.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
Zwally, H. J.	HQ-SG/Schmerling, E. R.	
(10-850 188-36-53)		

NGR 21-002-316 University of Maryland - College Park 2181
Research program in charged particle detector technology

Period	Obligations	
07/01/71-07/31/73	FY73: \$177,500 TOTAL: \$264,217	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gloeckler, G.	GSFC/Teegarden, B. J.	13-Physics
(51-850 385-46-00)	(51-850 832-12-00)	(51-850 188-46-51)

NGR 21-002-317 University of Maryland - College Park 2182
Chemical studies of the origin of life

Period	Obligations	
08/18/71-08/31/73	FY73: \$90,000 TOTAL: \$180,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ponnamperuma, C.	HQ-SL/Geib, D. S.	12-Chemistry
	HQ-SL/Young, R. S.	
(10-840 192-55-61)		

NGR 21-002-329 University of Maryland - College Park 2183
Lunar sample analysis

Period	Obligations	
10/19/71-07/01/73	FY73: \$67,900 TOTAL: \$89,400	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ponnamperuma, C.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 21-002-335 University of Maryland - College Park 2184
Mechanics of fracture of low density composites under dynamic thermal loading

Period	Obligations	
09/24/71-11/30/73	FY73: \$18,716 TOTAL: \$39,921	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yang, J. C.	ARC/Centoflanzi, F. J.	47-Materials Engr
	ARC/Larson, H. K.	
(21-704 502-37-02)		

NGR 21-002-344 University of Maryland - College Park 2185
Studies on thermophysical properties in critical region of fluids

Period	Obligations	
02/16/72-02/28/74	FY73: \$13,000 TOTAL: \$25,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sengers, J. V.	LERC/Simoneau, R. J.	12-Chemistry
(22-704 502-28-04)		

NGR 21-002-345 University of Maryland - College Park 2186
CO2 laser cold cathode research

Period	Obligations	
01/01/72-11/30/73	FY73: \$20,000 TOTAL: \$58,273	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hochuli, U. E.	GSFC/Hurt, C. R.	45-Elec Engr
	GSFC/McAvoy, N.	
(51-620 164-21-80)		

NGR 21-002-350 University of Maryland - College Park 2187
Optimum design of composite materials in response to aerodynamic noise & noise transmission

Period	Obligations	
03/07/72-02/28/73	FY73: TOTAL: \$14,947	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Yang, Y. C.	ARC/Chyu, W. J.	41-Aero Engr
(21-740 114-08-06)		

NGR 21-002-351 University of Maryland - College Park 2188
Techniques for processing of remotely sensed imagery

Period	Obligations	
04/01/72-03/31/73	FY73: \$69,488 TOTAL: \$93,488	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Deutsch, E. S.	GSFC/Alford, W. L.	99-Multi-Discip
(51-680 160-20-59)	(51-680 160-75-53)	

NGR 21-002-355 University of Maryland - College Park 2189
An investigation of microprogramming processors and their applications

Period	Obligations	
04/01/72-03/01/73	FY73: TOTAL: \$35,565	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pugsley, J. H.	GSFC/Pease, P. B.	45-Elec Engr
(51-500 150-22-38)		

NASA'S UNIVERSITY PROGRAM
MARYLAND (Continued)

NGR 21-002-358 University of Maryland - College Park 2190
The design of an apparatus capable of compressing solids to pressures in excess of one million atmospheres

Period	Obligations	
04/05/72-10/01/72	FY73: \$1,221	TOTAL: \$6,785
Prin. Invest.	NASA Tech. Officer	CASE Category
Spain, I. L.	LERC/Laurence, J. C.	49-Engr, NEC
	LERC/Coles, W. D.	

(22-704 502-04-35)

NGR 21-002-368 University of Maryland - College Park 2191
Geochemistry of lunar & meteoritic materials

Period	Obligations	
06/01/72-05/31/74	FY73: \$80,387	TOTAL: \$142,831
Prin. Invest.	NASA Tech. Officer	CASE Category
Weidner, J. R.	GSFC/Schnetzler, C. C.	32-Gelological Sci
	GSFC/Philpotts, J. A.	

(51-910 914-40-00) (51-850 188-45-53) (51-810 383-09-61)

NGR 21-002-378 University of Maryland - College Park 2192
Wind velocities from satellite pictures

Period	Obligations	
10/16/72-10/01/73	FY73: \$49,983	TOTAL: \$49,983
Prin. Invest.	NASA Tech. Officer	CASE Category
Rosenfeld, A.	GSFC/Arking, A.	31-Atmos Sci
Deutsch, E. S.		

(51-680 611-13-00)

NGR 21-002-390 University of Maryland - College Park 2193
Geophysical causes and measurement accuracies related to earth rotation

Period	Obligations	
12/11/72-12/01/73	FY73: \$13,104	TOTAL: \$13,104
Prin. Invest.	NASA Tech. Officer	CASE Category
Currie, D. G.	GSFC/Smith, D. E.	19-Phys Sci, NEC

(51-630 161-79-51)

NGR 21-002-391 University of Maryland - College Park 2194
Investigation of static aeroelastic phenomena associated with oblique wing aircraft AA

Period	Obligations	
01/18/73-04/30/74	FY73: \$15,604	TOTAL: \$15,604
Prin. Invest.	NASA Tech. Officer	CASE Category
Weisshaar, T. A.	ARC/Gaspers, P. A.	41-Aero Engr
	ARC/Pfyll, F.	

(21-702 760-64-01)

NGR 21-002-399 University of Maryland - College Park 2195
Urbanization and geologic processes in the Chesapeake Bay watershed

Period	Obligations	
03/01/73-02/28/74	FY73: \$9,900	TOTAL: \$9,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Weidner, J. R.	GSFC/	99-Multi-Discip

(51-680 160-75-98)

NGR 21-002-400 University of Maryland - College Park 2196
Preliminary experiments with a split sphere high pressure apparatus

Period	Obligations	
04/17/73-08/30/73	FY73: \$20,642	TOTAL: \$20,642
Prin. Invest.	NASA Tech. Officer	CASE Category
Spain, I.	LERC/Laurence, J. C.	46-Mech Engr
	LERC/Coles, W. D.	

(22-704 502-04-35)

NGT 21-002-254 University of Maryland - College Park 2197
Summer faculty fellowship program in research for 24 faculty members

Period	Obligations	
12/23/69-03/31/74	FY73:	TOTAL: \$203,680
Prin. Invest.	NASA Tech. Officer	CASE Category
Emad, F. P.	HQ-PY/Carter, C. H.	49-Engr, NEC

(10-370 181-00-00) (10-371 340-00-00)

NAS 6-2067 University of Maryland - Eastern Shore 2198
Library services

Period	Obligations	
09/08/71-09/30/73	FY73: \$41,118	TOTAL: \$80,381
Prin. Invest.	NASA Tech. Officer	CASE Category
	WS/Floyd, J. C.	99-Multi-Discip
	WS/Denton, S. R.	

(53-030 039-00-00)

NGR 21-119-001 University of Maryland - Eastern Shore 2199
The fabrication of semiconductor injection lasers with output to match specific atomic transitions

Period	Obligations	
10/12/72-09/01/73	FY73: \$15,709	TOTAL: \$15,709
Prin. Invest.	NASA Tech. Officer	CASE Category
Singh, G.	GSFC/Major, F. G.	13-Physics
	GSFC/McAvoy, N.	

(10-371 340-00-00)

NGR 21-119-002 University of Maryland - Eastern Shore 2200
A computer technique to vector aircrafts

Period	Obligations	
04/27/72-06/30/73	FY73:	TOTAL: \$7,408
Prin. Invest.	NASA Tech. Officer	CASE Category
Nagarajon, N.	HQ-PY/Pohly, J. G.	41-Aero Engr
	WS/Raine, A.	

(10-371 340-00-00)

NGR 21-119-003 University of Maryland - Eastern Shore 2201
High power pulsed laser beams and their atmospheric propagation limitations

Period	Obligations	
08/18/72-08/01/73	FY73: \$19,539	TOTAL: \$19,539
Prin. Invest.	NASA Tech. Officer	CASE Category
Singh, G.	HQ-PY/Pohly, J. G.	31-Atmos Sci
	WS/Lacheman, E. R., Jr.	

(10-371 340-00-00)

MASSACHUSETTS

NGR 22-003-017 Boston College 2202
A coordinated study of particles and aurora on the ATS field line

Period	Obligations	
04/06/71-12/31/72	FY73:	TOTAL: \$29,895
Prin. Invest.	NASA Tech. Officer	CASE Category
Eather, R. H.	HQ-SG/Hallenbeck, D. R.	13-Physics
	HQ-SG/Schmerling, E. R.	

(10-850 385-50-00)

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NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NGR 22-003-018 **Boston College** **2203**
Analysis of data from 1969 airborne auroral expedition & development of an auroral particle domains model

<i>Period</i>	<i>Obligations</i>	
04/01/71-10/01/71	FY73:	TOTAL: \$7,671
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eather, R. H.	ARC/Haughney, L. C.	32-Gelological Sci
	ARC/Bader, M.	
(21-850 352-01-02)	(21-500 311-04-05)	

NGR 22-003-019 **Boston College** **2204**
Forecasting performance of MOS device for space applications

<i>Period</i>	<i>Obligations</i>	
01/01/71-12/01/71	FY73:	TOTAL: \$10,157
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fang, P.	GSFC/Danchenko, V.	13-Physics
	GSFC/Schaefer, D. H.	
(51-750 125-23-10)		

NGR 22-003-027 **Boston College** **2205**
Analysis of 1967-1969 aircraft data

<i>Period</i>	<i>Obligations</i>	
07/15/72-07/14/73	FY73: \$10,000	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eather, R. H.	ARC/Haughney, L. C.	31-Atmos Sci
(21-850 352-02-02)		

NGR 22-003-028 **Boston College** **2206**
Factors affecting the transfer of NASA management techniques

<i>Period</i>	<i>Obligations</i>	
10/10/72-08/01/73	FY73: \$98,547	TOTAL: \$98,547
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bruce, B. N.	HQ-PY/Morris, J. D.	75-Political Sci
(10-371 340-00-00)		

NGT 22-003-001 **Boston College** **2207**
Training of predoctoral graduate students in space-related sciences & technology

<i>Period</i>	<i>Obligations</i>	
03/19/64-08/01/72	FY73:	TOTAL: \$217,314
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Aronoff, S.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGR 22-004-018 **Boston University** **2208**
Ultrasonic measurement of heart volume

<i>Period</i>	<i>Obligations</i>	
03/01/70-06/30/72	FY73:	TOTAL: \$65,511
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fulton, G. P.	HQ-MM/McKinney, V. L.	59-Life Sci, NEC
	HQ-MM/Deutsch, S.	
Berman, H. J.		
(25-770 127-00-00)	(10-970 970-13-30)	(10-770 127-00-00)

NGR 22-004-021 **Boston University** **2209**
Studies on the patrogenesis and therapy of orthostatic hypotension

<i>Period</i>	<i>Obligations</i>	
06/19/70-02/01/74	FY73: \$49,998	TOTAL: \$244,198
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chobanian, A. V.	JSC/Hoffler, G. W.	52-Clinical Med
(72-970 970-51-12)		

NGR 22-004-024 **Boston University** **2210**
Study of bird tracking by artificial satellite

<i>Period</i>	<i>Obligations</i>	
06/02/70-06/30/73	FY73:	TOTAL: \$119,940
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
MacKay, R. S.	HQ-ER/Jacobs, G. J.	51-Biology
(10-870 189-00-00)		

NGR 22-004-025 **Boston University** **2211**
Microbial contributions to the precambrian earth

<i>Period</i>	<i>Obligations</i>	
12/15/70-09/30/73	FY73: \$17,184	TOTAL: \$28,968
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Margulis, L.	HQ-SL/Young, R. S.	32-Gelological Sci
(10-840 192-55-62)		

NGR 22-004-027 **Boston University** **2212**
Dynamics of sinuous rill formation

<i>Period</i>	<i>Obligations</i>	
05/25/71-10/01/73	FY73:	TOTAL: \$19,705
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brewer, T.	HQ-SM/Bryson, R. P.	32-Gelological Sci
Coldwell, D. W.	HQ-MA/Allenby, R. J.	
Gheith, M. A.		
(10-810 383-09-50)		

NGR 22-004-030 **Boston University** **2213**
Compressible unsteady potential aerodynamic flow around lifting bodies having arbitrary shapes & motions

<i>Period</i>	<i>Obligations</i>	
12/18/71-10/31/73	FY73: \$50,508	TOTAL: \$87,826
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Murino, L.	LARC/Yates, E. C., Jr.	41-Aero Engr
	LARC/Lester, H. C.	
(23-704 501-22-01)		

NGR 22-004-035 **Boston University** **2214**
Measurement of cosmic background radiation at 1.32mm

<i>Period</i>	<i>Obligations</i>	
11/22/72-09/01/73	FY73: \$10,000	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	HQ-SG/	13-Physics
(10 850 188 41 55)		

NAS 8-28900 **Clark University** **2215**
Experimental investigation of the critical magnetic fields of a transition metal superconductor

<i>Period</i>	<i>Obligations</i>	
05/15/72-05/15/73	FY73:	TOTAL: \$12,597
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McEvoy, J. P.	MSFC/Urban, E. W.	13-Physics
	MSFC/Lacy, L. L.	
(62-740 114-03-03)		

NGR 22-091-002 **College of The Holy Cross** **2216**
Investigation of the effects of space environment on replica gratings

<i>Period</i>	<i>Obligations</i>	
05/25/66-06/30/73	FY73:	TOTAL: \$118,485
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gunter, R. C.	GSFC/Paul, F. W.	13-Physics
(51-850 188-00-00)		

NASA'S UNIVERSITY PROGRAM
MASSACHUSETTS (Continued)

NAS 1-10492 **Harvard University** **2217**
Participation in science planning for Viking 1975 missions in
area of entry science
Period *Obligations*
03/25/71-06/30/73 **FY73: \$36,300 TOTAL: \$92,600**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
McElroy, M. B. LARC/Soffen, G. A. 31-Atmos Sci
(23-840 815-20-00)

NAS 2-6644 **Harvard University** **2218**
Study of bone metabolism & hormones
Period *Obligations*
11/01/71-11/01/72 **FY73: TOTAL: \$39,152**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Tashjian, A. H. ARC/Dunlap, W. A. 51-Biology
(21-980 975-82-41)

NAS 5-9274 **Harvard University** **2219**
Pointed experiment for OSO-G orbiting solar observatory
Period *Obligations*
06/07/66-08/00/72 **FY73: TOTAL: \$3,934,834**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldberg, L. GSFC/Staff, W. O. 13-Physics
(51-850 821-00-00) (51-850 821-22-00)

NAS 5-23199 **Harvard University** **2220**
Atmosphere Explorer theoretical investigations
Period *Obligations*
03/19/73-08/16/77 **FY73: \$20,000 TOTAL: \$20,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
GSFC/ 31-Atmos Sci
(51-850 852-22-00)

NAS 9-13370 **Harvard University** **2221**
Monitoring & control of nutritional intake & collection of
metabolic excreta
Period *Obligations*
04/25/73-05/01/74 **FY73: \$38,000 TOTAL: \$38,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hegsted, D. M. JSC/Smith, M. C. 59-Life Sci, NEC
(72-960 948-60-90)

NGL 22-007-006 **Harvard University** **2222**
Theoretical & experimental studies on ultraviolet solar physics
Period *Obligations*
07/10/63-12/31/74 **FY73: \$165,000 TOTAL: \$3,551,398**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldberg, L. HQ-SG/Weldon, J. W. 11-Astronomy
HQ-SG/Oertel, G. K.
(10-850 188-38-53) (10-850 188-00-00)

NGL 22-007-012 **Harvard University** **2223**
Theoretical investigations in structural mechanics with particular
emphasis on fracture mechanics and thin-shell analysis
Period *Obligations*
02/03/64-06/01/73 **FY73: TOTAL: \$527,252**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Budiansky, B. LARC/McCombjr, H. G. 46-Mech Engr
LARC/Stephens, W. B.
(23-742 124-00-00) (10-742 124-00-00) (23-742 124-08-15)

NGL 22-007-053 **Harvard University** **2224**
Study of space cabin atmospheres
Period *Obligations*
07/31/65-06/01/72 **FY73: TOTAL: \$227,560**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Burgess, W. A. ARC/Leavitt, W. F. 59-Life Sci, NEC
(25-770 127-00-00) (21-770 127-00-00) (25-770 708-00-00)

NGL 22-007-069 **Harvard University** **2225**
Infrared absorption spectrophotometry of organic extractives from
precambrian sediments
Period *Obligations*
05/29/66-05/31/76 **FY73: \$50,038 TOTAL: \$231,732**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Borghoorn, E. S. HQ-SL/Geib, D. S. 32-Gelological Sci
(10-840 192-55-62)

NGL 22-007-101 **Harvard University** **2226**
Factors in bone formation and bone loss
Period *Obligations*
06/14/67-05/01/73 **FY73: TOTAL: \$101,924**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hegstad, D. M. ARC/Young, D. 59-Life Sci, NEC
(21-770 127-00-00) (10-770 127-00-00)

NGL 22-007-117 **Harvard University** **2227**
Investigation of the behavior of ultrashort light pulses of
picosecond duration in optical media
Period *Obligations*
04/22/68-01/31/76 **FY73: \$30,000 TOTAL: \$205,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bloembergen, N. GSFC/Plotkin, H. H. 13-Physics
ARC/Billman, K.
(51-704 502-03-11) (51-740 129-02-20)

NGL 22-007-136 **Harvard University** **2228**
Theoretical atomic and molecular physics
Period *Obligations*
09/01/68-08/01/74 **FY73: \$10,000 TOTAL: \$186,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Dalgarno, O. HQ-SG/Weldon, J. M. 11-Astronomy
HQ-SG/Oertel, G. K.
(10-850 188-38-53)

NGL 22-007-228 **Harvard University** **2229**
Theoretical investigation of multiphase in Jupiter interior and
possible relationship to behavior of outer atmospheric layers
Period *Obligations*
12/15/71-09/01/74 **FY73: \$36,629 TOTAL: \$89,629**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goody, R. M. HQ-SL/Fellows, R. F. 31-Atmos Sci
HQ-SL/Hipsher, H. F.
(10-840 185-47-81)

NGL 22-007-247 **Harvard University** **2230**
Lunar sample analysis
Period *Obligations*
06/30/72-01/31/76 **FY73: \$93,100 TOTAL: \$119,800**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hays, J. F. JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)

**NASA'S UNIVERSITY PROGRAM
MASSACHUSETTS (Continued)**

NGR 22-007-137 **Harvard University** **2231**
Behavioral factors in control of cardiovascular function
Period *Obligations*
02/19/69-12/01/71 **FY73:** **TOTAL: \$45,036**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kelleher, R. T. HQ-MM/Belleville, R. E. 61-Biol Aspects
(10-870 189-00-00)

NGR 22-007-138 **Harvard University** **2232**
Concept formation in animals
Period *Obligations*
05/22/69-06/01/72 **FY73:** **TOTAL: \$92,434**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Herrnstein, R. J. HQ-ER/Jacobs, G. J. 61-Biol Aspects
(10-870 189-00-00) (10-870 189-52-61) (21-870 189-52-61)

NGR 22-007-172 **Harvard University** **2233**
Application of system theory methods to power processing problems
Period *Obligations*
01/09/69-07/31/73 **FY73:** **TOTAL: \$75,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Brockett, R. W. LERC/Lalli, V. R. 45-Elec Engr
(22-710 120-60-03) (22-710 138-60-02) (22-710 120-00-00)

NGR 22-007-175 **Harvard University** **2234**
Melting behavior and phase relations in the lunar interior
Period *Obligations*
05/26/70-04/30/73 **FY73:** **TOTAL: \$151,904**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hays, J. F. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Allenby, R. J.
(10-810 383-09-53) (10-810 383-00-00) (10-810 195-42-65)

NGR 22-007-176 **Harvard University** **2235**
Research on complexity problems and formal language theory
Period *Obligations*
05/15/70-06/30/73 **FY73:** **TOTAL: \$49,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Book, R. V. HQ-RE/Rosenfeld, S. A. 21-Mathematics
(10-740 129-04-20) (10-740 129-00-00)

NGR 22-007-191 **Harvard University** **2236**
Lunar sample analysis
Period *Obligations*
12/29/70-01/31/74 **FY73:** **TOTAL: \$81,200**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Frondel, C. JSC/Harris, J. W. 32-Geological Sci
(72-910 914-40-00)

NGR 22-007-199 **Harvard University** **2237**
Lunar sample analysis
Period *Obligations*
02/03/71-01/31/73 **FY73:** **TOTAL: \$5,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hays, J. F. JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)

NGR 22-007-202 **Harvard University** **2238**
Investigation of center-to-limb variations in far ultraviolet
Period *Obligations*
11/05/70-12/31/73 **FY73:** **TOTAL: \$605,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldberg, L. HQ-SG/Weldon, J. M. 11-Astronomy
HQ-SG/Oertel, G. K.
(10-850 879-11-00)

NGR 22-007-203 **Harvard University** **2239**
Correlation of medical history data with biochemical laboratory values
Period *Obligations*
06/26/70-06/30/73 **FY73:** **TOTAL: \$82,051**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hershberg, P. I. HQ-JG/Arnoldi, L. B. 52-Clinical Med
HQ-JG/Limoncelli, D. D.
(10-030 016-00-00) (10-030 039-00-00)

NGR 22-007-211 **Harvard University** **2240**
Analysis of data obtained from OSO-VI
Period *Obligations*
06/02/71-02/28/73 **FY73:** **TOTAL: \$250,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldberg, L. HQ-SG/Oertel, G. K. 11-Astronomy
HQ-SG/Weldon, J. M.
(10-850 385-38-00)

NGR 22-007-240 **Harvard University** **2241**
Planetary Explorer mission definition
Period *Obligations*
03/17/72-12/31/72 **FY73:** **TOTAL: \$2,520**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goody, R. M. HQ-SL/Fellows, R. F. 31-Atmos Sci
(10-840 186-68-63)

NGR 22-007-242 **Harvard University** **2242**
Theoretical researches into planetary atmospheres and their influence upon surface features
Period *Obligations*
06/13/72-06/14/73 **FY73:** **TOTAL: \$27,672**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goody, R. M. HQ-SL/Fellows, R. F. 31-Atmos Sci
(10-840 185-47-81)

NGR 22-007-256 **Harvard University** **2243**
Bone metabolism and hormones
Period *Obligations*
03/28/73-12/31/73 **FY73:** **TOTAL: \$29,086**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Tashjian, A. H., Jr. ARC/Young, D. R. 53-Other Medical
(21-970 970-21-14) (21-970 970-21-45) (21-970 970-21-61)

NGT 22-007-008 **Harvard University** **2244**
Training of post-M.D. students in field of aerospace medicine
Period *Obligations*
07/17/63-08/31/73 **FY73:** **TOTAL: \$276,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
McFarland, R. A. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

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NGR 22-018-006 Lowell Technological Institute 2245
 Analysis of self oscillating dc to dc converters

<i>Period</i>	<i>Obligations</i>	
02/02/73-01/31/74	FY73: \$2,400	TOTAL: \$2,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burger, P.	LERC/Lalli, V. R.	45-Elec Engr
(22-704 502-25-70)		

NAS 1-9684 Massachusetts Institute of Technology 2246
 Participation in the science planning for the Viking 1975 missions in the area of molecular analysis

<i>Period</i>	<i>Obligations</i>	
05/01/70-03/31/77	FY73: \$112,200	TOTAL: \$304,167
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Biemann, K.	LARC/Soffen, G. A.	12-Chemistry
(23-840 815-20-00)		

NAS 1-9691 Massachusetts Institute of Technology 2247
 Participation in the science planning for the Viking 1975 missions in the area of biology

<i>Period</i>	<i>Obligations</i>	
06/15/70-03/31/77	FY73: \$11,500	TOTAL: \$41,533
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rich, A.	LARC/Soffen, G. A.	51-Biology
(23-840 815-20-00)	(23-840 815-00-00)	

NAS 1-9702 Massachusetts Institute of Technology 2248
 Participation in the science planning for the Viking 1975 missions in the area of radio science

<i>Period</i>	<i>Obligations</i>	
05/20/70-03/31/77	FY73:	TOTAL: \$71,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shapiro, I. T.	LARC/Soffen, G. A.	45-Elec Engr
(23-840 815-20-00)	(23-840 815-00-00)	

NAS 1-9812 Massachusetts Institute of Technology 2249
 Studies of methods to accomplish wind tunnel simulation of store jettison with the aid of artificial gravity generated by magnetic fields

<i>Period</i>	<i>Obligations</i>	
04/17/70-08/01/71	FY73:	TOTAL: \$72,825
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Covert, E. E.	LARC/Taylor, R. T.	19-Phys Sci, NEC
(23-760 126-00-00)		

NAS 1-10677 Massachusetts Institute of Technology 2250
 Digital flight control research

<i>Period</i>	<i>Obligations</i>	
05/05/71-07/01/72	FY73:	TOTAL: \$99,660
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	LARC/	42-Astro Engr
(23-750 125-06-16)	(23-760 737-54-12)	(23-750 125-17-07)

NAS 1-10693 Massachusetts Institute of Technology 2251
 Development of experiments for microwave temperature sounding of the mesosphere and upper stratosphere (AAFE)

<i>Period</i>	<i>Obligations</i>	
06/25/71-09/24/73	FY73:	TOTAL: \$136,078
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Staelin, D. H.	LARC/Howell, J. Q.	31-Atmos Sci
(23-620 630-52-00)		

NAS 1-11092 Massachusetts Institute of Technology 2252
 Study of remote sensing techniques for atmospheric aerosols and trace constituents

<i>Period</i>	<i>Obligations</i>	
10/13/71-10/27/72	FY73: \$1,700	TOTAL: \$155,894
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Phillips, N. A.	LARC/Dodgen, J. A.	31-Atmos Sci
Gray, C. R.	LARC/Russell, J. M., III	
(23-620 630-52-00)		

NAS 2-5951 Massachusetts Institute of Technology 2253
 Development of implantable biotelemetry ion detector

<i>Period</i>	<i>Obligations</i>	
06/11/70-07/01/71	FY73:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bowditch, P. N.	ARC/Winget, C. M.	51-Biology
(21-870 189-00-00)		

NAS 2-6175 Massachusetts Institute of Technology 2254
 Investigation of helicopter rotor blade stability

<i>Period</i>	<i>Obligations</i>	
10/09/70-10/01/72	FY73:	TOTAL: \$80,355
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tong, P.	ARC/Ormiston, R. A.	41-Aero Engr
	ARC/Morse, H. A.	
(21-760 136-9X-00)	(21-760 126-00-00)	

NAS 2-6437 Massachusetts Institute of Technology 2255
 Defining STOL air traffic environment & operational procedures

<i>Period</i>	<i>Obligations</i>	
05/04/71-07/06/73	FY73:	TOTAL: \$94,361
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schlundt, R. W.	ARC/Johnson, N. S.	41-Aero Engr
Dewolf, J. B.	ARC/Bretol, R. N.	
(21-705 130-06-24)	(21-763 133-17-02)	

NAS 2-7262 Massachusetts Institute of Technology 2256
 Study of gust response & alleviation for propeller in cruising flight

<i>Period</i>	<i>Obligations</i>	
11/06/72-11/05/73	FY73: \$69,500	TOTAL: \$69,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ham, N. D.	ARC/Rabbott, J. P., Jr.	41-Aero Engr
Deysl, J.	ARC/Johnson, W. R.	
Tong, P.		
(21-702 760-63-03)		

NAS 2-7439 Massachusetts Institute of Technology 2257
 SIRU flight test readiness

<i>Period</i>	<i>Obligations</i>	
04/11/73-04/10/74	FY73: \$330,536	TOTAL: \$330,536
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gilmore, J. P.	ARC/Hrudy, R. J.	42-Astro Engr
(21-702 768-81-05)		

NAS 2-7620 Massachusetts Institute of Technology 2258
 Cost study of noise reduction in tilt rotor aircraft

<i>Period</i>	<i>Obligations</i>	
06/14/73-05/31/74	FY73: \$35,435	TOTAL: \$35,435
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simpson, R. W.	ARC/Rabbott, J. P., Jr.	41-Aero Engr
Faulkner, H. B.		
(21-702 760-63-03)		

NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NAS 2-7648 **Massachusetts Institute of Technology** **2259**
Analyses of differential base line interferometry

Period	Obligations	
06/22/73-07/16/73	FY73: \$5,200	TOTAL: \$5,200
Prin. Invest.	NASA Tech. Officer	CASE Category
	ARC/	45-Elec Engr

(21-840 186-68-63)

NAS 2-7684 **Massachusetts Institute of Technology** **2260**
Helicopter noise study

Period	Obligations	
06/26/73-08/25/74	FY73: \$50,068	TOTAL: \$50,068
Prin. Invest.	NASA Tech. Officer	CASE Category
Widnall, S. E.	ARC/Schmitz, F. H.	41-Aero Engr
	ARC/Boxwell, D. A.	

(21-704 501-9X-00)

NAS 5-11002 **Massachusetts Institute of Technology** **2261**
Inertial reference unit for OAO

Period	Obligations	
04/21/67-06/30/73	FY73: \$84,489	TOTAL: \$7,767,872
Prin. Invest.	NASA Tech. Officer	CASE Category
Marshall, R. E.	GSFC/Kull, F. J.	11-Astronomy

(51-850 831-41-00)

NAS 5-11062 **Massachusetts Institute of Technology** **2262**
IMP H&J plasma experiment

Period	Obligations	
05/17/68-06/30/75	FY73: \$192,000	TOTAL: \$1,573,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bridge, H. S.	GSFC/Davis, M. A.	13-Physics
Lazarus, A. J.		
Binsack, J. H.		

(51-850 861-42-00)

NAS 5-11082 **Massachusetts Institute of Technology** **2263**
Studies and design for a rotating wheel experiment to provide a two color survey of the positions and time variations of cosmic X-ray sources

Period	Obligations	
06/30/67-08/00/73	FY73: \$165,000	TOTAL: \$1,886,072
Prin. Invest.	NASA Tech. Officer	CASE Category
	GSFC/	31-Atmos Sci

(51-850 821-22-00)

NAS 5-11450 **Massachusetts Institute of Technology** **2264**
An experiment to perform X-ray astronomy of the SAS-C spacecraft

Period	Obligations	
06/16/71-01/05/75	FY73: \$2,125,000	TOTAL: \$4,771,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	GSFC/Wrublik, D. P.	11-Astronomy
	GSFC/Townsend, M. R.	

(51-850 878-12-00)

NAS 5-11909 **Massachusetts Institute of Technology** **2265**
Review of the theoretical formulation & principles of dynamic error analysis

Period	Obligations	
03/17/72-11/17/72	FY73:	TOTAL: \$24,882
Prin. Invest.	NASA Tech. Officer	CASE Category
Venti, J.	GSFC/Bonavito, N. L.	19-Phys Sci, NEC

(51-500 150-22-22)

NAS 5-11947 **Massachusetts Institute of Technology** **2266**
Data analysis and support for STADAN unified S-band tracking system hardware and very long baseline interferometry experiments

Period	Obligations	
10/12/72-10/01/74	FY73: \$96,500	TOTAL: \$96,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Counselman, C. C., III	GSFC/Salzberg, I. M.	19-Phys Sci, NEC
Shapiro, I. I.	GSFC/Zufall, S. Z.	

(51-500 311-02-65)

NAS 5-21791 **Massachusetts Institute of Technology** **2267**
Computer program

Period	Obligations	
07/26/72-07/01/73	FY73: \$99,898	TOTAL: \$99,898
Prin. Invest.	NASA Tech. Officer	CASE Category
Edelbaum, T. E.	GSFC/Duck, K. I.	42-Astro Engr

(51-830 180-06-50)

NAS 5-21917 **Massachusetts Institute of Technology** **2268**
Investigation of feasibility of incorporating automated landmark recognition into the SIMS

Period	Obligations	
04/13/73-10/13/74	FY73: \$70,000	TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ogletree, E. G.	GSFC/Flaherty, J. B.	45-Elec Engr
Smith, M. A.		
White, R. L.		

(51-680 160-20-51)

NAS 8-2481 **Massachusetts Institute of Technology** **2269**
Preliminary design study for Saturn guidance system

Period	Obligations	
11/01/66-11/01/77	FY73:	TOTAL: \$7,771
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	42-Astro Engr

(62-750 125-00-00)

NAS 8-24364 **Massachusetts Institute of Technology** **2270**
Integration of NASA-sponsored studies on aluminum welding

Period	Obligations	
05/21/69-09/30/73	FY73: \$5,000	TOTAL: \$32,393
Prin. Invest.	NASA Tech. Officer	CASE Category
Masubuchi, K.	MSFC/Hasemyer, E. A.	49-Engr, NEC
	MSFC/Parks, P. G.	

(62-250 141-92-00)

NAS 8-24365 **Massachusetts Institute of Technology** **2271**
Analysis of thermal stresses & metal movement during welding

Period	Obligations	
05/14/69-06/30/74	FY73: \$10,100	TOTAL: \$65,225
Prin. Invest.	NASA Tech. Officer	CASE Category
Masubuchi, K.	MSFC/Poorman, R. M.	46-Mech Engr
	MSFC/Siler, H. L.	

(62-980 908-51-21)

NAS 8-24585 **Massachusetts Institute of Technology** **2272**
A study program of curved crystal focusing X-ray spectrometer

Period	Obligations	
06/18/69-08/01/72	FY73:	TOTAL: \$179,580
Prin. Invest.	NASA Tech. Officer	CASE Category
Lark, G. C.	MSFC/Reynolds, J. M.	41-Aero Engr
Schnopper, H.	MSFC/Fields, S.	

(62-850 188-00-00) (62-850 188-78-53)

NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NAS 8-26839 **Massachusetts Institute of Technology** **2273**
 HEAO definition study integrated X-ray modulation collimator experiment

Period	Obligations	
02/01/71-06/30/72	FY73: TOTAL: \$419,437	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bradt, H.	MSFC/Potter, R. A.	11-Astronomy
(62-850 832-12-00)	(62-850 188-78-53)	

NAS 8-26840 **Massachusetts Institute of Technology** **2274**
 HEAO definition study high energy X-ray experiment

Period	Obligations	
02/01/71-06/30/72	FY73: TOTAL: \$397,662	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lewin, W. H.	MSFC/Power, J. A.	11-Astronomy
(62-850 188-78-53)	(62-850 832-12-00)	

NAS 8-27624 **Massachusetts Institute of Technology** **2275**
 Space shuttle onboard checkout system

Period	Obligations	
06/28/71-06/01/73	FY73: TOTAL: \$239,943	
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	42-Astro Engr
(62-980 908-52-18)		

NAS 8-27733 **Massachusetts Institute of Technology** **2276**
 Research on optical aircraft experiment

Period	Obligations	
06/29/71-07/31/73	FY73: \$6,950 TOTAL: \$10,593	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoversten, E. V.	MSFC/Randall, J. L.	13-Physics
(62-750 115-22-05)	MSFC/Marrero, P. J.	

NAS 8-27972 **Massachusetts Institute of Technology** **2277**
 Design, development, & operations of the AXR-2 integrated modulation collimator experiment under the HEAO program

Period	Obligations	
06/23/72-03/15/77	FY73: \$100,000 TOTAL: \$212,220	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bradt, H. V.	MSFC/Bodie, W. G.	11-Astronomy
(62-850 832-12-00)	MSFC/Gustin, R. A.	

NAS 8-27975 **Massachusetts Institute of Technology** **2278**
 Design and development of the AGR-5 high energy X-ray experiment under the HEAO program

Period	Obligations	
06/23/72-02/01/78	FY73: \$68,000 TOTAL: \$838,672	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lewin, W. H.	MSFC/Jordan, W.	11-Astronomy
(62-850 832-12-00)	MSFC/Jones, J. B.	

NAS 8-28055 **Massachusetts Institute of Technology** **2279**
 Research study on the design and control of remote manipulators

Period	Obligations	
01/05/72-12/31/73	FY73: \$18,000 TOTAL: \$57,600	
Prin. Invest.	NASA Tech. Officer	CASE Category
Sheridan, T. B.	MSFC/Counter, D. N.	46-Mech Engr
Whitney, D. E.	MSFC/Valley, D. P.	
(62-970 970-63-20)		

NAS 8-28189 **Massachusetts Institute of Technology** **2280**
 Apollo indium antimonide remelt experiment

Period	Obligations	
12/09/71-08/14/72	FY73: TOTAL: \$15,081	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gatos, H. C.	MSFC/Snyder, R. S.	47-Materials Engr
(62-910 933-50-00)		

NAS 8-28306 **Massachusetts Institute of Technology** **2281**
 Skylab indium antimonide crystals experiment

Period	Obligations	
11/08/72-04/30/74	FY73: \$20,000 TOTAL: \$20,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gatos, H. C.	MSFC/Adams, W. R.	19-Phys Sci, NEC
Witt, A. F.	MSFC/Johnston, M. H.	
(62-960 948-90-95)		

NAS 8-28411 **Massachusetts Institute of Technology** **2282**
 Evaluation of biogrowth processing in space

Period	Obligations	
02/23/72-02/22/73	FY73: TOTAL: \$10,011	
Prin. Invest.	NASA Tech. Officer	CASE Category
Sinskey, A. J.	MSFC/Beyerle, F. J.	31-Atmos Sci
(62-980 975-90-95)	MSFC/Scott, F. E.	

NAS 8-28732 **Massachusetts Institute of Technology** **2283**
 Electron beam melting or welding of various metals in space & braising of SS tubes and directional solidification

Period	Obligations	
06/06/72-12/15/73	FY73: \$30,000 TOTAL: \$37,025	
Prin. Invest.	NASA Tech. Officer	CASE Category
Masubuchi, K.	MSFC/Hoppes, R. V.	46-Mech Engr
(62-960 948-90-95)	MSFC/Poorman, R. M.	

NAS 8-29187 **Massachusetts Institute of Technology** **2284**
 Research program in support of development of large lightweight telescope mirrors

Period	Obligations	
09/27/72-04/01/73	FY73: \$59,228 TOTAL: \$59,228	
Prin. Invest.	NASA Tech. Officer	CASE Category
Soosar, K.	MSFC/Clarke, W. D.	46-Mech Engr
(62-980 975-84-78)	MSFC/Counter, D. N.	
	(62-980 975-84-20)	

NAS 8-29724 **Massachusetts Institute of Technology** **2285**
 Fabrication and delivery of one each SD-2 hand controller, with electronics, software, and associated documentation

Period	Obligations	
05/21/73-08/21/73	FY73: \$7,766 TOTAL: \$7,766	
Prin. Invest.	NASA Tech. Officer	CASE Category
Woodin, A.	MSFC/Thornton, W. G.	46-Mech Engr
(62-970 970-63-20)	MSFC/Cline, S.	

NAS 9-4065 **Massachusetts Institute of Technology** **2286**
 Apollo guidance & navigation systems design

Period	Obligations	
04/08/65-12/31/73	FY73: \$5,251,469 TOTAL: \$13,972,266	
Prin. Invest.	NASA Tech. Officer	CASE Category
Driscoll, D. C.	JSC/Tribble, E. L., Jr.	42-Astro Engr
(72-680 160-20-51)	(72-960 961-12-00)	(72-704 501-26-06)

**NASA'S UNIVERSITY PROGRAM
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NAS 9-6823 **Massachusetts Institute of Technology** **2287**
Development and laboratory test of advanced manned mission
guidance and control techniques

<i>Period</i>	<i>Obligations</i>	
04/14/67-12/31/72	FY73:	TOTAL: \$2,685,349
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ragan, R.	JSC/Jones, M. E.	21-Mathematics
(72-980 905-00-00)	(72-980 904-00-00)	(72-910 914-50-00)

NAS 9-8242 **Massachusetts Institute of Technology** **2288**
Strapdown inertial reference unit

<i>Period</i>	<i>Obligations</i>	
06/28/68-12/31/72	FY73:	TOTAL: \$2,762,178
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sears, N.	JSC/Jones, M. E.	42-Astro Engr
(72-980 908-10-00)	(72-980 908-42-00)	(72-980 905-00-00)

NAS 9-8328 **Massachusetts Institute of Technology** **2289**
Study of the engineering and design of an EOTVOS experiment
in orbit and other gravitational experiments

<i>Period</i>	<i>Obligations</i>	
11/18/68-08/01/71	FY73:	TOTAL: \$349,091
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weiss, R.	JSC/Giuli, R. T.	11-Astronomy
(72-910 914-50-00)	(72-910 914-40-00)	(72-910 924-23-00)

NAS 9-10268 **Massachusetts Institute of Technology** **2290**
Advanced guidance & navigation control systems analysis

<i>Period</i>	<i>Obligations</i>	
01/07/70-06/30/73	FY73:	TOTAL: \$608,702
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sears, N. E.	JSC/Cox, K. J.	42-Astro Engr
(72-980 908-41-00)	(72-980 908-41-10)	(72-980 908-42-10)

NAS 9-10658 **Massachusetts Institute of Technology** **2291**
Analysis of intermediate moisture foods

<i>Period</i>	<i>Obligations</i>	
04/28/70-03/01/72	FY73:	TOTAL: \$44,996
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Labuza, T. P.	JSC/Heidelbaugh, N. D.	
	JSC/Smith, M. C.	59-Life Sci, NEC
(72-770 127-49-02)	(72-770 127-00-00)	

NAS 9-10748 **Massachusetts Institute of Technology** **2292**
Lunar surface electrical properties study

<i>Period</i>	<i>Obligations</i>	
06/03/70-07/01/71	FY73:	TOTAL: \$534,989
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simmons, M. G.	JSC/Stewart, E. B.	19-Phys Sci, NEC
(72-910 914-40-00)		

NAS 9-10749 **Massachusetts Institute of Technology** **2293**
Traverse gravimeter

<i>Period</i>	<i>Obligations</i>	
06/03/70-07/01/71	FY73:	TOTAL: \$498,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wing, C. G.	JSC/Tewart, R. S.	32-Geological Sci
(72-910 914-40-00)		

NAS 9-10754 **Massachusetts Institute of Technology** **2294**
Interrelationship between protein intake and physical per-
formance

<i>Period</i>	<i>Obligations</i>	
05/11/70-03/10/73	FY73:	TOTAL: \$73,599
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scrimshaw, N. S.	JSC/Rambaut, P. C.	59-Life Sci, NEC
Young, V. R.		
(72-960 948-60-00)	(72-970 970-51-14)	

NAS 9-11540 **Massachusetts Institute of Technology** **2295**
Surface electrical properties experiment

<i>Period</i>	<i>Obligations</i>	
03/31/71-08/01/73	FY73: \$850,000	TOTAL: \$7,100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simmons, D. G.	JSC/Cubley, D.	19-Phys Sci, NEC
(72-910 914-40-00)		

NAS 9-11555 **Massachusetts Institute of Technology** **2296**
Design, development, fabrication, testing, & delivery of a traverse
gravimeter experiment

<i>Period</i>	<i>Obligations</i>	
02/04/71-03/31/73	FY73: \$450,220	TOTAL: \$5,115,220
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Harper, J.	JSC/Holley, M. H.	19-Phys Sci, NEC
(72-910 914-40-00)		

NAS 9-11764 **Massachusetts Institute of Technology** **2297**
Guidance & control software equations definition

<i>Period</i>	<i>Obligations</i>	
08/31/71-06/30/73	FY73:	TOTAL: \$134,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Olsen, E.	JSC/Smith, E. E., Jr.	42-Astro Engr
(72-910 914-50-00)		

NAS 9-12289 **Massachusetts Institute of Technology** **2298**
Bedside biomedical computer

<i>Period</i>	<i>Obligations</i>	
12/10/71-06/30/73	FY73:	TOTAL: \$114,355
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lees, R. S.	JSC/Hoffler, G. W.	52-Clinical Med
(72-910 914-50-00)	(72-250 141-91-00)	(72-770 127-49-19)

NAS 9-12334 **Massachusetts Institute of Technology** **2299**
Co-investigator support for Apollo passive seismic experiment

<i>Period</i>	<i>Obligations</i>	
01/07/72-10/31/74	FY73: \$70,000	TOTAL: \$155,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Toksoz, M. N.	JSC/Eichelman, W. F.	31-Atmos Sci
(72-910 914-40-00)		

NAS 9-12485 **Massachusetts Institute of Technology** **2300**
Mechanisms of deterioration of nutrients

<i>Period</i>	<i>Obligations</i>	
03/17/72-04/01/77	FY73: \$35,000	TOTAL: \$95,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Karel, M.	JSC/Heidelbaugh, N. D.	
Flink, J. M.		53-Other Medical
(72-970 970-51-14)		

**NASA'S UNIVERSITY PROGRAM
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NAS 9-13207 **Massachusetts Institute of Technology** **2301**
Technical support for guidance navigation & control for space shuttle program

Period	Obligations	
11/01/72-08/02/74	FY73: \$750,000	TOTAL: \$750,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoag, D.	JSC/Fuller, J. F.	41-Aero Engr
(72-920 986-13-00)		

NASW 2197 **Massachusetts Institute of Technology** **2302**
Research study on domestic information network; an assessment of technology and demand

Period	Obligations	
03/09/71-07/01/72	FY73:	TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Harrington, J. V.	HQ-EC/Silverman, D.	99-Multi-Discip
	HQ-EC/Andrus, A. G.	
(10-620 164-00-00)		

NASW 2276 **Massachusetts Institute of Technology** **2303**
Development of techniques for a self-organizing computer

Period	Obligations	
07/20/71-06/30/72	FY73:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Phillips, N.	HQ-RE/Rosenfeld, S. A.	21-Mathematics
Schaffner, M. M.		
(10-740 129-04-21)		

NASW 2412 **Massachusetts Institute of Technology** **2304**
Air transportation systems analysis for aeronautical technologist

Period	Obligations	
06/20/72-06/30/73	FY73: \$125,245	TOTAL: \$210,399
Prin. Invest.	NASA Tech. Officer	CASE Category
Simpon, R.	HQ-RO/Enders, J. H.	99-Multi-Discip
	HQ-RD/Cherry, G. W.	
(10-701 791-91-51) (10-763 133-17-01) (10-705 139-06-01)		

NASW 2524 **Massachusetts Institute of Technology** **2305**
Four-week workshop on problems of low/medium density air transportation

Period	Obligations	
05/24/73-12/31/73	FY73: \$30,000	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-R/	41-Aero Engr
(10-701 791-91-51)		

NAS12-2033 **Massachusetts Institute of Technology** **2306**
Experimental studies of body mounted gyroscope design techniques

Period	Obligations	
11/27/68-09/30/73	FY73:	TOTAL: \$230,248
Prin. Invest.	NASA Tech. Officer	CASE Category
Gilmore, J. P.	MSFC/Jones, C. S.	49-Engr, NEC
	MSFC/Gainis, B. J.	
(62-830 180-17-52) (25-830 180-00-00) (62-830 180-00-00)		

NAS12-2265 **Massachusetts Institute of Technology** **2307**
Design of respiratory system for space station

Period	Obligations	
06/02/70-12/31/72	FY73:	TOTAL: \$131,177
Prin. Invest.	NASA Tech. Officer	CASE Category
Yankovitch, D.	ARC/Chambers, A. B.	59-Life Sci, NEC
	ARC/Quattrone, P. D.	
(21-770 127-53-40) (21-770 127-00-00)		

NGL 22-009-002 **Massachusetts Institute of Technology** **2308**
Measuring & displaying information to human senses to achieve optimum control of artificial manipulative devices

Period	Obligations	
10/01/70-09/01/73	FY73:	TOTAL: \$447,190
Prin. Invest.	NASA Tech. Officer	CASE Category
Sheridan, T. B.	LARC/Whitten, J. B.	45-Elec Engr
	ARC/Sadoff, M.	
(23-750 125-19-21) (23-750 135-19-01)		

NGL 22-009-003 **Massachusetts Institute of Technology** **2309**
Mechanisms of alloy strengthening by fine particle dispersions emphasizing reduction of nonrefractory oxides, stability of metals oxide systems & solid solution in metal-metal oxide alloys

Period	Obligations	
11/15/70-06/01/75	FY73: \$80,000	TOTAL: \$973,770
Prin. Invest.	NASA Tech. Officer	CASE Category
Grant, N. J.	LERC/Quatinetz, M.	47-Materials Engr
Pelloux, R.		
(22-704 501-01-06) (10-740 129-00-00) (22-740 129-03-20)		

NGL 22-009-010 **Massachusetts Institute of Technology** **2310**
Analytic & laboratory investigations to determine information on possible guidance, navigation control systems & instrumentation concepts

Period	Obligations	
07/20/62-12/01/72	FY73:	TOTAL: \$1,305,836
Prin. Invest.	NASA Tech. Officer	CASE Category
Markey, W. R.	HQ-RE/Michaels, T. S.	49-Engr, NEC
(10-750 125-00-00) (25-750 125-00-00)		

NGL 22-009-013 **Massachusetts Institute of Technology** **2311**
Research on problems of communication in space environment

Period	Obligations	
12/27/62-10/31/75	FY73: \$90,000	TOTAL: \$1,116,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Kennedy, R. S.	HQ-RE/Meson, J. K.	13-Physics
	ARC/Lumb, D. R.	
(10-704 502-03-12) (10-750 125-22-14) (10-750 125-00-00)		

NGL 22-009-014 **Massachusetts Institute of Technology** **2312**
Theoretical and experimental investigations in electrohydrodynamics and wave type magnetohydrodynamics

Period	Obligations	
03/27/63-06/30/73	FY73:	TOTAL: \$527,703
Prin. Invest.	NASA Tech. Officer	CASE Category
Melcher, J. R.	HQ-RW/Gessow, A.	41-Aero Engr
(10-740 129-00-00)		

NGL 22-009-015 **Massachusetts Institute of Technology** **2313**
Theoretical and experimental investigations of interplanetary medium and in gamma ray astronomy

Period	Obligations	
01/01/63-12/01/75	FY73:	TOTAL: \$3,522,166
Prin. Invest.	NASA Tech. Officer	CASE Category
Bridge, H. S.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Roman, N. G.	
(10-850 188-41-59) (10-850 188-00-00)		

NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NGL 22-009-016 Massachusetts Institute of Technology **2314**
Electromagnetic investigations of planetary and solar atmospheres and the lunar surface

Period	Obligations
05/01/63-04/30/74	FY73: TOTAL: \$1,391,075
Prin. Invest.	NASA Tech. Officer CASE Category
Barrett, A. H.	HQ-SL/Brunk, W. E. 32-Geological Sci
(10-840 185-00-00)	

NGL 22-009-019 Massachusetts Institute of Technology **2315**
Multidisciplinary research in space-related physical, engineering, social and life sciences

Period	Obligations
09/27/63-02/28/74	FY73: TOTAL: \$8,051,886
Prin. Invest.	NASA Tech. Officer CASE Category
Harrington, J. V.	HQ-PY/Redding, E. R. 99-Multi-Discip
(10-370 183-00-00)	(10-870 189-00-00) (10-750 125-00-00)

NGL 22-009-025 Massachusetts Institute of Technology **2316**
Human dynamic space orientation using techniques of control theory

Period	Obligations
01/30/64-12/01/76	FY73: TOTAL: \$980,091
Prin. Invest.	NASA Tech. Officer CASE Category
Young, L. R.	LARC/Whitten, J. B. 41-Aero Engr
(23-750 125-19-01)	ARC/Sadoff, M. (23-750 135-19-01)

NGL 22-009-124 Massachusetts Institute of Technology **2317**
Control optimization stabilization and computation of algorithms for space applications

Period	Obligations
03/30/66-08/01/74	FY73: \$60,000 TOTAL: \$465,189
Prin. Invest.	NASA Tech. Officer CASE Category
Newton, G. C., Jr.	ARC/Doolin, B. F. 49-Engr, NEC
(21-704 501-03-11)	ARC/Erzberger, H.

NGL 22-009-125 Massachusetts Institute of Technology **2318**
Studies on the relationship between crystalline structure and superconductivity

Period	Obligations
05/05/66-04/01/75	FY73: TOTAL: \$246,124
Prin. Invest.	NASA Tech. Officer CASE Category
Gatos, H. C.	MSFC/Dalins, I. 13-Physics
(10-740 129-00-00)	MSFC/Stern, H. E. (25-740 129-00-00) (62-740 114-03-03)

NGL 22-009-156 Massachusetts Institute of Technology **2319**
Biophysical evaluation of the human vestibular system

Period	Obligations
03/30/66-12/01/73	FY73: \$30,000 TOTAL: \$258,032
Prin. Invest.	NASA Tech. Officer CASE Category
Young, L. R.	HQ-MM/Lang, R. H. 59-Life Sci, NEC
(10-970 970-11-11)	HQ-MM/Vinograd, S. P.

NGL 22-009-187 Massachusetts Institute of Technology **2320**
Lunar geophysics, as related to the Apollo applications program

Period	Obligations
09/02/66-02/28/76	FY73: \$120,000 TOTAL: \$548,782
Prin. Invest.	NASA Tech. Officer CASE Category
Press, F.	HQ-SM/Bryson, R. P. 11-Astronomy
(10-810 383-09-56)	HQ-SM/Allenby, R. J. (10-810 383-09-53) (10-810 195-00-00)

NGL 22-009-304 Massachusetts Institute of Technology **2321**
Communications biophysics temporal structure of electrophysiological data

Period	Obligations
04/30/68-11/01/72	FY73: TOTAL: \$398,436
Prin. Invest.	NASA Tech. Officer CASE Category
Burns, S. K.	ARC/Anliker, J. E. 45-Elec Engr
(10-870 189-00-00)	(21-770 127-49-37) (21-770 127-00-00)

NGL 22-009-308 Massachusetts Institute of Technology **2322**
Maturation and development of mechanisms of orientation and postural control

Period	Obligations
12/01/67-08/31/75	FY73: \$56,900 TOTAL: \$666,646
Prin. Invest.	NASA Tech. Officer CASE Category
Tauber, H.	ARC/Daunton, N. G. 59-Life Sci, NEC
(21-970 970-21-53)	

NGL 22-009-309 Massachusetts Institute of Technology **2323**
Research in integrated plan & control system

Period	Obligations
07/01/68-09/01/73	FY73: TOTAL: \$162,000
Prin. Invest.	NASA Tech. Officer CASE Category
Zannetos, Z. S.	HQ-PA/Smolensky, S. 45-Elec Engr
(25-750 125-00-00)	(10-750 125-00-00)

NGL 22-009-334 Massachusetts Institute of Technology **2324**
Atmospheric effects on sonic boom pressure waveforms

Period	Obligations
10/29/68-01/01/73	FY73: TOTAL: \$58,000
Prin. Invest.	NASA Tech. Officer CASE Category
Pierce, A. D.	LARC/Cawthorn, J. M. 41-Aero Engr
(23-760 126-00-00)	LARC/Maglieri, D. J.

NGL 22-009-337 Massachusetts Institute of Technology **2325**
Avalanche diode devices for the generation of coherent radiation

Period	Obligations
06/28/68-02/01/73	FY73: TOTAL: \$156,500
Prin. Invest.	NASA Tech. Officer CASE Category
Penfield, P.	LARC/Fales, C. L. 45-Elec Engr
(25-750 125-00-00)	LARC/Breckenridge, R. A. (23-750 125-00-00) (23-750 115-25-01)

NGL 22-009-383 Massachusetts Institute of Technology **2326**
Research in propulsion and power generation

Period	Obligations
01/16/69-09/01/72	FY73: \$100,000 TOTAL: \$580,000
Prin. Invest.	NASA Tech. Officer CASE Category
Kerrebrock, J. L.	LERC/Evvard, J. C. 41-Aero Engr
(22-704 501-04-03)	

NGL 22-009-521 Massachusetts Institute of Technology **2327**
Composition and structure of planetary atmospheres

Period	Obligations
08/10/70-06/01/74	FY73: \$59,982 TOTAL: \$216,581
Prin. Invest.	NASA Tech. Officer CASE Category
Lewis, J. S.	HQ-SL/Fellows, R. F. 31-Atmos Sci
(10-840 185-47-81)	

NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NGL 22-009-548 Massachusetts Institute of Technology **2328**
 Flight control systems research

Period	Obligations	
08/17/70-08/01/74	FY73: \$122,760	TOTAL: \$299,198
Prin. Invest.	NASA Tech. Officer	CASE Category
Whitaker, H. P.	FRC/Szalai, K. J.	41-Aero Engr
	FRC/Deets, D. A.	
(24-742 747-81-01)	(24-760 136-62-02)	(24-760 761-74-04)

NGL 22-009-571 Massachusetts Institute of Technology **2329**
 Investigation of application of control theory to aeroelastic problems

Period	Obligations	
09/03/70-08/01/73	FY73:	TOTAL: \$63,244
Prin. Invest.	NASA Tech. Officer	CASE Category
Deyst, J. J.	LARC/Rainey, A. G.	41-Aero Engr
(23-760 126-14-14)		

NGL 22-009-638 Massachusetts Institute of Technology **2330**
 Research in space science

Period	Obligations	
03/03/72-02/29/76	FY73: \$200,000	TOTAL: \$400,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Harrington, J. V.	HQ-PY/Redding, E. R.	99-Multi-Discip
(10-371 340-00-00)		

NGL 22-009-640 Massachusetts Institute of Technology **2331**
 Joint university research program for air transportation needs

Period	Obligations	
11/24/71-10/31/75	FY73: \$56,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Simpson, R. W.	LARC/Mace, W. D.	41-Aero Engr
	LARC/Mace, W. D.	
(23-704 501-03-02)	(23-750 135-06-02)	

NGR 22-009-005 Massachusetts Institute of Technology **2332**
 Detection & identification of organic matter by mass spectro-metry

Period	Obligations	
12/01/61-06/30/73	FY73: \$70,818	TOTAL: \$650,738
Prin. Invest.	NASA Tech. Officer	CASE Category
Biemann, K.	HQ-SL/Geisch, D. S.	12-Chemistry
	HQ-SL/Young, R. S.	
(10-840 192-55-62)	(10-840 192-55-63)	(10-870 189-00-00)

NGR 22-009-018 Massachusetts Institute of Technology **2333**
 Partial support of multidisciplinary studies in neurosciences

Period	Obligations	
06/20/63-06/01/72	FY73:	TOTAL: \$936,375
Prin. Invest.	NASA Tech. Officer	CASE Category
Schmitt, F. O.	HQ-MM/Belleville, R. E.	52-Clinical Med
(10-870 189-00-00)	(10-870 189-52-62)	

NGR 22-009-102 Massachusetts Institute of Technology **2334**
 Investigation of the effect of space environment on replica gratings

Period	Obligations	
06/28/66-12/01/77	FY73:	TOTAL: \$193,638
Prin. Invest.	NASA Tech. Officer	CASE Category
Biemann, K.	HQ-SS/	42-Astro Engr
(10-860 849-00-00)	(10-860 848-00-00)	

NGR 22-009-207 Massachusetts Institute of Technology **2335**
 Applications of guidance theory & trajectory analysis

Period	Obligations	
04/03/70-09/17/73	FY73: \$79,000	TOTAL: \$405,840
Prin. Invest.	NASA Tech. Officer	CASE Category
Markey, W. R.	GSFC/Barbieri, R. W.	42-Astro Engr
	GSFC/Lefferts, E. J.	
(51-830 180-06-50)	(51-980 981-60-10)	

NGR 22-009-277 Massachusetts Institute of Technology **2336**
 The prebiotic synthesis of polynucleotides and polynucleotide-directed polypeptides

Period	Obligations	
12/01/67-06/30/73	FY73: \$59,992	TOTAL: \$283,810
Prin. Invest.	NASA Tech. Officer	CASE Category
Rich, A.	HQ-SL/Young, R. S.	12-Chemistry
(10-840 192-55-61)		

NGR 22-009-312 Massachusetts Institute of Technology **2337**
 Life support in unusual environment

Period	Obligations	
05/07/68-09/30/73	FY73:	TOTAL: \$284,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Reid, R. C.	ARC/Quattrone, P. D.	12-Chemistry
Reid, R. C.	HQ-MM/Pecoraro, J. N.	
(10-770 127-00-00)	(10-770 127-53-22)	

NGR 22-009-339 Massachusetts Institute of Technology **2338**
 Proposed investigation of concepts, methods of analysis, and evaluation thereof for containment/control of fragments from bursting turbine rotors

Period	Obligations	
06/14/68-08/01/72	FY73: \$70,000	TOTAL: \$315,630
Prin. Invest.	NASA Tech. Officer	CASE Category
Witner, E. A.	LERC/Chiarito, P. T.	41-Aero Engr
Leech, J. W.	LERC/Kemp, R. H.	
Yeghiayan, R. P.		
(22-704 501-38-13)		

NGR 22-009-350 Massachusetts Institute of Technology **2339**
 Spectral reflectance of planetary surfaces

Period	Obligations	
03/25/69-08/31/74	FY73: \$30,000	TOTAL: \$255,700
Prin. Invest.	NASA Tech. Officer	CASE Category
McCord, T. B.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	
(10-810 383-09-56)	(10-810 195-00-00)	(10-810 195-42-66)

NGR 22-009-366 Massachusetts Institute of Technology **2340**
 Mariner V tracking-data analysis

Period	Obligations	
03/11/69-06/30/73	FY73:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Shapiro, I. I.	HQ-SG/Roman, N. G.	31-Atmos Sci
(10-850 385-00-00)		

NGR 22-009-372 Massachusetts Institute of Technology **2341**
 Satellite plasma data analysis

Period	Obligations	
04/17/69-01/31/73	FY73:	TOTAL: \$489,717
Prin. Invest.	NASA Tech. Officer	CASE Category
Bridge, H. S.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	
(10-850 385-00-00)	(10-850 385-36-00)	

NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NGR 22-009-378 **Massachusetts Institute of Technology** **2342**
Study of pollutants from jet aircraft

Period	Obligations
02/14/69-07/31/74	FY73: \$113,575 TOTAL: \$299,575
Prin. Invest.	NASA Tech. Officer CASE Category
Fay, J. A.	LERC/Holdeman, J. D. 41-Aero Engr
(22-704 501-24-20)	

NGR 22-009-421 **Massachusetts Institute of Technology** **2343**
Microwave studies of the earth's atmosphere in support of meteorological satellite observations

Period	Obligations
06/30/70-06/30/73	FY73: \$36,000 TOTAL: \$186,000
Prin. Invest.	NASA Tech. Officer CASE Category
Barrett, A. H.	GSFC/Wilheit, T. T. 31-Atmos Sci
(51-680 160-44-54)	

NGR 22-009-473 **Massachusetts Institute of Technology** **2344**
Planetary astronomy

Period	Obligations
06/10/70-12/31/73	FY73: \$82,500 TOTAL: \$271,500
Prin. Invest.	NASA Tech. Officer CASE Category
McCord, T. B.	HQ-SL/Brunk, W. E. 11-Astronomy
	HQ-SL/Fellows, R. F.
(10-840 196-41-80)	(10-840 196-00-00)

NGR 22-009-517 **Massachusetts Institute of Technology** **2345**
Solidification (crystal growth) in the absence of gravitational forces

Period	Obligations
04/24/70-12/01/73	FY73: \$74,965 TOTAL: \$252,265
Prin. Invest.	NASA Tech. Officer CASE Category
Gatos, H. C.	MSFC/Snyder, R. S. 12-Chemistry
(62-980 975-90-95)	(62-980 975-90-00) (62-740 129-03-26)

NGR 22-009-526 **Massachusetts Institute of Technology** **2346**
Astronomy in the region between 1 mm to 0.1 mm wavelengths

Period	Obligations
09/22/70-09/30/73	FY73: \$53,500 TOTAL: \$143,500
Prin. Invest.	NASA Tech. Officer CASE Category
Weiss, R.	HQ-SG/Bogges, N. W. 11-Astronomy
	HQ-SG/Roman, N. G.
(10-850 188-41-55)	

NGR 22-009-535 **Massachusetts Institute of Technology** **2347**
Research in machine vision

Period	Obligations
06/26/70-06/01/72	FY73: TOTAL: \$47,000
Prin. Invest.	NASA Tech. Officer CASE Category
Guzman-Arenas, A.	HQ-RE/Rosenfeld, R. A.99-Multi-Discip
(10-740 129-00-00)	

NGR 22-009-540 **Massachusetts Institute of Technology** **2348**
Lunar sample analysis

Period	Obligations
02/08/71-01/31/74	FY73: \$35,000 TOTAL: \$245,825
Prin. Invest.	NASA Tech. Officer CASE Category
Simmons, G.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NGR 22-009-543 **Massachusetts Institute of Technology** **2349**
Lunar sample analysis

Period	Obligations
01/27/71-11/01/72	FY73: TOTAL: \$77,500
Prin. Invest.	NASA Tech. Officer CASE Category
Biemann, K.	JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)	

NGR 22-009-551 **Massachusetts Institute of Technology** **2350**
Lunar sample analysis

Period	Obligations
02/11/71-01/31/74	FY73: \$40,000 TOTAL: \$127,600
Prin. Invest.	NASA Tech. Officer CASE Category
Burns, R. G.	JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)	

NGR 22-009-583 **Massachusetts Institute of Technology** **2351**
Spectroscopy of the asteroids

Period	Obligations
10/26/71-08/30/73	FY73: \$30,000 TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer CASE Category
McCord, T. B.	HQ-SG/Dubin, M. 11-Astronomy
(10-850 188-45-51)	

NGR 22-009-597 **Massachusetts Institute of Technology** **2352**
Lunar sample analysis

Period	Obligations
02/01/71-01/31/74	FY73: \$20,000 TOTAL: \$54,800
Prin. Invest.	NASA Tech. Officer CASE Category
Westphal, W. B.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NGR 22-009-605 **Massachusetts Institute of Technology** **2353**
Investigation of aircraft wakes

Period	Obligations
04/06/71-05/31/74	FY73: \$34,807 TOTAL: \$86,649
Prin. Invest.	NASA Tech. Officer CASE Category
Widnall, S. E.	ARC/Corsiglia, V. R. 41-Aero Engr
	ARC/Rossow, V. J.
(21-704 501-06-04)	(21-760 737-05-10) (21-760 136-9X-00)

NGR 22-009-618 **Massachusetts Institute of Technology** **2354**
Laboratory study of sonic booms and their scaling laws

Period	Obligations
06/17/71-05/31/73	FY73: \$38,160 TOTAL: \$75,160
Prin. Invest.	NASA Tech. Officer CASE Category
Toong, T. G.	LARC/Barger, R. L. 41-Aero Engr
	LARC/Carlson, H. W.
(10-760 136-13-02)	

NGR 22-009-619 **Massachusetts Institute of Technology** **2355**
Management decision systems study

Period	Obligations
04/13/71-09/15/72	FY73: TOTAL: \$28,896
Prin. Invest.	NASA Tech. Officer CASE Category
Crowston, W. B.	HQ-SL/Harnett, D. J. 31-Atmos Sci
	HQ-SL/Hipsher, H. F.
(10-250 141-00-00)	

NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NGR 22-009-625 **Massachusetts Institute of Technology** **2356**
 Study of the Mariner Mars 1969 image data

Period	Obligations	
05/19/71-03/31/73	FY73: \$23,700	TOTAL: \$47,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Thomas, T. B.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	

(10-840 384-50-80)

NGR 22-009-626 **Massachusetts Institute of Technology** **2357**
 Definition phase of the Grand Tour missions radio science investigations for outer planet missions

Period	Obligations	
04/08/71-07/01/73	FY73:	TOTAL: \$6,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Shapiro, I. I.	HQ-SL/Mitz, M. A.	13-Physics
	HQ-SL/Keller, J. W.	

(10-840 186-68-52)

NGR 22-009-627 **Massachusetts Institute of Technology** **2358**
 Control of serotonin-containing neurons in the brain, by plasma tryptophan

Period	Obligations	
08/04/71-11/01/73	FY73: \$61,000	TOTAL: \$118,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wurtman, R. J.	ARC/Winget, C. M.	52-Clinical Med
	ARC/Vernikos Danell, J.	

Lynch, H. J.
 (21-970 970-21-52)

NGR 22-009-637 **Massachusetts Institute of Technology** **2359**
 Volcanic geology photographic field studies of eruption mechanisms

Period	Obligations	
06/18/71-05/31/73	FY73: \$25,475	TOTAL: \$57,875
Prin. Invest.	NASA Tech. Officer	CASE Category
McGetchin, T. R.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	

(10-840 185-50-81)

NGR 22-009-646 **Massachusetts Institute of Technology** **2360**
 Lunar sample analysis

Period	Obligations	
06/16/71-01/31/74	FY73: \$53,900	TOTAL: \$151,800
Prin. Invest.	NASA Tech. Officer	CASE Category
Uhlmann, D. R.	JSC/Harris, J. W.	47-Materials Engr

(72-910 914-40-00)

NGR 22-009-658 **Massachusetts Institute of Technology** **2361**
 Novel space fastening techniques suitable for assembly and disassembly by teleoperators

Period	Obligations	
12/06/71-08/31/72	FY73:	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Sheridan, T. B.	HQ-NS/Miller, D. J.	46-Mech Engr
	HQ-NS/Johnsen, E. G.	

(10-720 112-30-17)

NGR 22-009-672 **Massachusetts Institute of Technology** **2362**
 Ground-based radar study of the moon and planets

Period	Obligations	
03/06/72-03/31/74	FY73: \$35,000	TOTAL: \$60,800
Prin. Invest.	NASA Tech. Officer	CASE Category
Pettengill, G. H.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	

(10-840 196-41-82)

NGR 22-009-693 **Massachusetts Institute of Technology** **2363**
 Mission definition for planetary Explorer missions

Period	Obligations	
03/03/72-07/01/72	FY73:	TOTAL: \$4,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Pettengill, G. H.	HQ-SL/Fellows, R. F.	31-Atmos Sci

(10-840 186-68-63)

NGR 22-009-694 **Massachusetts Institute of Technology** **2364**
 Planetary Explorer mission definitions

Period	Obligations	
03/08/72-06/30/73	FY73:	TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Shapiro, I. I.	HQ-SL/Fellows, R. F.	31-Atmos Sci

(10-840 186-68-63)

NGR 22-009-701 **Massachusetts Institute of Technology** **2365**
 Integration of visual and motion requirements for flight simulation and ride quality investigation

Period	Obligations	
05/18/72-04/02/74	FY73: \$60,000	TOTAL: \$125,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Young, L. R.	LARC/Stone, R. W., Jr.	41-Aero Engr
Curry, R. E.	LARC/Queijo, M. J.	

(23-704 501-29-14)

NGR 22-009-718 **Massachusetts Institute of Technology** **2366**
 Spectroscopic observations of the moon, asteroids, and planets from the NASA 91.5 cm airborne

Period	Obligations	
03/01/73-02/28/74	FY73: \$35,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mc Lord, T. B.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, J. M., Jr.	

(21-850 352-02-03)

NGR 22-009-723 **Massachusetts Institute of Technology** **2367**
 Bosch process and evaluation of bosch carbon as a sorbent

Period	Obligations	
09/19/72-09/30/73	FY73: \$21,902	TOTAL: \$21,902
Prin. Invest.	NASA Tech. Officer	CASE Category
Reid, R. C.	ARC/Quattrone, P. D.	12-Chemistry

(21-970 970-22-21)

NGR 22-009-726 **Massachusetts Institute of Technology** **2368**
 Projection of future trends in neuroscience

Period	Obligations	
10/12/72-11/01/73	FY73: \$30,000	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Schmitt, F. O.	ARC/Winter, D. L.	59-Life Sci, NEC
	ARC/Billingham, J.	

(21-970 970-21-52)

NASA'S UNIVERSITY PROGRAM **MASSACHUSETTS (Continued)**

NGR 22-009-727 **Massachusetts Institute of Technology** **2369**
Study in numerical modeling of atmospheric phenomena

Period	Obligations	
02/01/73-01/31/74	FY73: \$75,000	TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Lorenz, E.	GSFC/Jastrow, R.	31-Atmos Sci
	GSFC/Halem, M.	

(51-680 408-02-02)

NGR 22-009-731 **Massachusetts Institute of Technology** **2370**
Workshop to identify priorities for motorless flight research

Period	Obligations	
09/01/72-02/01/73	FY73: \$7,834	TOTAL: \$7,834
Prin. Invest.	NASA Tech. Officer	CASE Category
Markey, W.	LARC/Phillips, W. H.	41-Aero Engr
	LARC/Gera, J.	

(23-702 760-60-01)

NGR 22-009-733 **Massachusetts Institute of Technology** **2371**
Investigation of pilot's role & display requirements in automatic landings

Period	Obligations	
10/30/72-09/01/73	FY73: \$49,450	TOTAL: \$49,450
Prin. Invest.	NASA Tech. Officer	CASE Category
Curry, R. E.	ARC/Wempe, T.	59-Life Sci, NEC

(21-704 501-03-11) (21-704 501-29-02)

NGR 22-009-735 **Massachusetts Institute of Technology** **2372**
Eotvos experiment in earth orbit and related studies

Period	Obligations	
06/07/73-04/30/74	FY73: \$100,000	TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-MT/	13-Physics

(10-980 908-91-24)

NGR 22-009-781 **Massachusetts Institute of Technology** **2373**
Exploitation of advanced composite materials to lightly loaded structures

Period	Obligations	
04/16/73-12/31/73	FY73: \$29,932	TOTAL: \$29,932
Prin. Invest.	NASA Tech. Officer	CASE Category
Mar, J. W.	LARC/Kyser, A. C.	41-Aero Engr
	LARC/Mikulas, M. M., Jr.	

(23-704 501-02-01) (23-704 501-21-23)

NGR 22-009-782 **Massachusetts Institute of Technology** **2374**
Gust alleviation system for a light airplane

Period	Obligations	
04/23/73-08/22/73	FY73: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Deyst, J. J.	LARC/Stewart, E. C.	41-Aero Engr

(23-704 501-26-05)

NGR 22-009-785 **Massachusetts Institute of Technology** **2375**
Guest observer program for the MIT X-ray experiment on the OSO-7

Period	Obligations	
06/20/73-06/30/74	FY73: \$48,852	TOTAL: \$48,852
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	HQ-SG/Roman, N. G.	13-Physics
	GSFC/Ashworth, C. D.	

(10-850 385-41-00)

NGR 22-009-786 **Massachusetts Institute of Technology** **2376**
Analysis of satellite plasma data

Period	Obligations	
06/22/73-03/31/74	FY73: \$29,981	TOTAL: \$29,981
Prin. Invest.	NASA Tech. Officer	CASE Category
Bridge, H. S.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Schmerling, E. R.	

(10-850 385-36-00)

NGR 22-009-805 **Massachusetts Institute of Technology** **2377**
Flow-generated noise and aeroacoustic instabilities in ducts and silencers

Period	Obligations	
09/01/73-08/31/76	FY73: \$45,000	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ingard, K. U.	LERC/Baumeister, K. J.	41-Aero Engr
	LERC/Rice, E. J.	

(22-704 501-15-83)

NSR 22-009-073 **Massachusetts Institute of Technology** **2378**
Adaption of Explorer XI gamma-ray experiment to OAO spacecraft

Period	Obligations	
08/01/65-08/01/76	FY73:	TOTAL: \$1,995
Prin. Invest.	NASA Tech. Officer	CASE Category
Kraushaar, W.	HQ-SG/	11-Astronomy

(10-850 831-00-00)

NSR 22-009-654 **Massachusetts Institute of Technology** **2379**
X-ray astronomy experiments from sounding rockets in FY 1972

Period	Obligations	
01/18/72-08/31/72	FY73:	TOTAL: \$124,939
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, G. W.	HQ-SG/Boggess, N. W.	11-Astronomy
	HQ-SG/Roman, N. G.	

(10-850 879-11-00)

SNPN-54 **Massachusetts Institute of Technology** **2380**
Development of multi-moded remote manipulator

Period	Obligations	
07/01/70-06/01/72	FY73: \$115,000	TOTAL: \$364,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	NSO-N/	49-Engr, NEC

(44-704 503-24-01)

NAS12-2053 **Northeastern University** **2381**
Power thyristor improvement study

Period	Obligations	
06/30/70-11/01/72	FY73:	TOTAL: \$99,792
Prin. Invest.	NASA Tech. Officer	CASE Category
	LERC/Meyers, I. T.	45-Elec Engr

(22-710 120-00-00) (25-710 120-00-00)

NGL 22-011-025 **Northeastern University** **2382**
Investigation of a new chemical laser system

Period	Obligations	
09/26/69-12/01/71	FY73:	TOTAL: \$81,316
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiss, K.	GSFC/Johnson, C.	13-Physics

(25-750 125-00-00) (51-750 125-00-00)

**NASA'S UNIVERSITY PROGRAM
MASSACHUSETTS (Continued)**

NGR 22-011-069 **Northeastern University** **2383**
Lunar sample analysis
Period *Obligations*
02/09/71-06/30/72 FY73: TOTAL: \$25,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Perry, C. H. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGR 22-011-070 **Northeastern University** **2384**
Circadian rhythms in brain & behavior
Period *Obligations*
07/01/70-06/30/74 FY73: \$40,000 TOTAL: \$108,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Terman, M. ARC/Anliker, J. E. 61-Biol Aspects
(21-970 970-21-52) (21-970 970-21-53) (21-970 970-21-62)

NGR 22-011-072 **Northeastern University** **2385**
Study of air pollutant sampling and remote sensing
Period *Obligations*
07/24/70-12/31/72 FY73: TOTAL: \$44,570
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Nowak, W. B. HQ-ER/Lehmann, J. 39-Env Sci, NEC
HQ-PY/Vitale, J. A.
(10-680 160-00-00)

NGR 22-011-073 **Northeastern University** **2386**
Application of filamentary composites to primary aerodynamic surfaces of advanced aircraft
Period *Obligations*
08/17/71-11/16/72 FY73: TOTAL: \$31,583
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rossettos, J. N. LARC/Cooper, P. A. 41-Aero Engr
(23-765 742-73-01)

NGR 22-011-077 **Northeastern University** **2387**
Selected reliability studies for the NERVA program
Period *Obligations*
07/14/71-01/31/73 FY73: TOTAL: \$49,985
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Nowak, W. B. HQ-NS/Gavigan, F. X. 46-Mech Engr
HQ-NS/Schwenk, F. C.
(45-720 122-29-13)

NGT 22-011-003 **Northeastern University** **2388**
Training of graduate students in space-related science and technology
Period *Obligations*
04/04/63-08/01/72 FY73: TOTAL: \$298,484
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Essigmann, M. W. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NSG 310 **Northeastern University** **2389**
Studies in magnetohydrodynamics to explain the structure of spiral galaxies
Period *Obligations*
09/01/72-09/01/74 FY73: TOTAL: \$34,956
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kaula, W. M. GSFC/ 11-Astronomy
(51-850 188-00-00)

NGR 22-031-002 **Southeastern Massachusetts University** **2390**
Low data rate digital space communications study
Period *Obligations*
09/01/71-08/31/73 FY73: TOTAL: \$9,188
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Chen, C. H. GSFC/Kutz, R. L. 45-Elec Engr
GSFC/Rochelle, R. W.
(51-840 186-68-60)

NGR 22-012-026 **Tufts University** **2391**
Investigation of atraumatic techniques for monitoring cardiovascular status and conditioning
Period *Obligations*
03/07/72-12/31/73 FY73: \$25,000 TOTAL: \$50,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Spodick, D. H. JSC/Jackson, M. M. 51-Biology
Pigott, V. M.
(72-970 970-51-12) (72-910 914-51-00)

NGR 22-012-028 **Tufts University** **2392**
Influence of a cross-flow on jet noise
Period *Obligations*
01/25/72-03/01/72 FY73: TOTAL: \$2,300
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Cole, J. ARC/Soderman, P. T. 41-Aero Engr
(21-702 760-72-02)

NGR 22-012-030 **Tufts University** **2393**
Biochemical localization of bioadhesive-producing gland
Period *Obligations*
05/17/73-05/31/74 FY73: \$8,000 TOTAL: \$8,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rule, A. H. ARC/Harrison, G. A. 59-Life Sci, NEC
(21-970 970-23-30)

NAS 5-21813 **University of Massachusetts - Amherst** **2394**
Sea surface observations in support of NASA ocean color remote sensing experiment
Period *Obligations*
07/21/72-09/21/72 FY73: \$16,500 TOTAL: \$16,500
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Yentsch, C. S. GSFC/Hovis, W. A. 33-Oceanography
(51-680 613-00-00)

NAS 8-29073 **University of Massachusetts - Amherst** **2395**
Working model of a general purpose end effector for a remote controlled manipulator
Period *Obligations*
06/23/72-06/21/73 FY73: TOTAL: \$23,360
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Crossley, F. R. MSFC/Patterson, J. W. 46-Mech Engr
MSFC/Dane, D.
(62-720 112-30-13)

NGL 22-010-018 **University of Massachusetts - Amherst** **2396**
Pulse frequency modulation in control systems
Period *Obligations*
03/12/68-01/01/75 FY73: \$25,000 TOTAL: \$131,575
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Monopoli, R. V. GSFC/Rolinski, A. J. 45-Elec Engr
(51-500 310-20-32)

**NASA'S UNIVERSITY PROGRAM
MASSACHUSETTS (Continued)**

NGL 22-010-023 University of Massachusetts - Amherst 2397
Theoretical studies of diffuse reflection and transmission of radiation in planetary atmospheres

Period	Obligations	
05/24/67-08/01/74	FY73: \$39,982	TOTAL: \$222,761
Prin. Invest.	NASA Tech. Officer	CASE Category
Irvine, W. M.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-00-00)	(10-840 196-41-85)	

NGL 22-010-025 University of Massachusetts - Amherst 2398
Study of solar chromosphere from balloon altitudes

Period	Obligations	
10/24/67-08/01/73	FY73: \$35,000	TOTAL: \$496,007
Prin. Invest.	NASA Tech. Officer	CASE Category
Strong, J.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-52)		

NGL 22-010-029 University of Massachusetts - Amherst 2399
Low temperature studies on proteins and certain organisms

Period	Obligations	
05/16/68-04/01/73	FY73:	TOTAL: \$111,440
Prin. Invest.	NASA Tech. Officer	CASE Category
Nordin, J. H.	HQ-MM/Saunders, J. F.	51-Biology
(10-870 189-54-62)		

NGL 22-010-089 University of Massachusetts - Amherst 2400
Lunar sample analysis

Period	Obligations	
03/16/71-01/31/76	FY73: \$14,740	TOTAL: \$59,541
Prin. Invest.	NASA Tech. Officer	CASE Category
Haggerty, S. E.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 22-010-039 University of Massachusetts - Amherst 2401
A research program in solar radio physics

Period	Obligations	
10/30/68-08/31/73	FY73: \$50,000	TOTAL: \$330,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hueuenin, G. R.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-52)		

NGR 22-010-052 University of Massachusetts - Amherst 2402
Structural analysis of mare orientale

Period	Obligations	
05/19/70-07/01/74	FY73:	TOTAL: \$26,248
Prin. Invest.	NASA Tech. Officer	CASE Category
McGill, G. E.	HQ-SM/Bryson, R. P.	32-Geological Sci
Wise, D. U.	HQ-SM/Allenby, R. J.	
(10-810 383-00-00)	(10-810 383-09-50)	

NGR 22-010-054 University of Massachusetts - Amherst 2403
Study of Mariner photography for evidences of wind action and related phenomena on Mars

Period	Obligations	
03/19/70-12/31/73	FY73:	TOTAL: \$11,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hartshorn, J. H.	HQ-SL/Dwornik, S. E.	32-Geological Sci
(10-840 384-50-80)	(10-840 384-00-00)	

NGR 22-010-063 University of Massachusetts - Amherst 2404
Some real fluid effects in compression noise

Period	Obligations	
04/09/70-12/31/72	FY73:	TOTAL: \$14,801
Prin. Invest.	NASA Tech. Officer	CASE Category
Mani, R.	LERC/Dittmar, J. H.	41-Aero Engr
(22-740 129-00-00)	(10-740 129-00-00)	

NGR 22-010-076 University of Massachusetts - Amherst 2405
Reconnaissance study of large geologic ring structures on Mars

Period	Obligations	
05/19/70-08/31/73	FY73: \$14,981	TOTAL: \$47,625
Prin. Invest.	NASA Tech. Officer	CASE Category
McGill, G. E.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	
(10-840 384-50-80)	(10-840 384-00-00)	

NAS 9-12563 Woods Hole Oceanographic Institute 2406
Gravity and crustal structure data analysis

Period	Obligations	
04/28/72-07/01/75	FY73:	TOTAL: \$72,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/	32-Geological Sci
(72-910 914-49-00)		

NAS 9-12564 Woods Hole Oceanographic Institute 2407
Volcanology and morphology data analysis

Period	Obligations	
04/28/72-07/01/75	FY73:	TOTAL: \$54,722
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/	32-Geological Sci
(72-910 914-49-00)		

NGL 22-017-006 Worcester Polytechnic Institute 2408
Environmental control for prolonged space voyages adsorption/desorption of nitrogen oxides

Period	Obligations	
03/08/68-04/01/73	FY73:	TOTAL: \$84,158
Prin. Invest.	NASA Tech. Officer	CASE Category
Zwiebel, I.	ARC/Wydeven, T.	59-Life Sci, NEC
(21-770 127-00-00)		

NGR 22-017-023 Worcester Polytechnic Institute 2409
Interfaced system for production of glycerol from methane in a spacecraft

Period	Obligations	
04/12/72-05/31/73	FY73:	TOTAL: \$8,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiss, A.	ARC/Shapira, J.	12-Chemistry
(21-970 970-22-24)	(21-970 970-22-20)	

NGR 22-017-024 Worcester Polytechnic Institute 2410
Production of edible carbohydrates from formaldehyde in a spacecraft

Period	Obligations	
01/17/73-05/31/74	FY73: \$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiss, A. H.	ARC/Shapira, J.	43-Chem Engr
	ARC/Quattrone, P. D.	
(21-970 970-22-24)		

NASA'S UNIVERSITY PROGRAM

MICHIGAN

NAS 9-11562 Eastern Michigan University 2411
Survival of fungi and yeasts in lunar environment

Period	Obligations	
02/16/71-02/18/74	FY73: \$9,000	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Volz, P. A.	JSC/Taylor, G. R.	51-Biology
(72-910 914-50-00)		

NAS 1-6860 Michigan State University 2412
Provide beam time not to exceed 60 hours on 48 MeV accelerators

Period	Obligations	
11/01/66-11/01/77	FY73:	TOTAL: \$6,840
Prin. Invest.	NASA Tech. Officer	CASE Category
	LARC/	13-Physics
(23-742 124-00-00)		

NAS 5-21834 Michigan State University 2413
ERTS-A data user investigation of multidisciplinary analysis of Michigan resources

Period	Obligations	
08/17/72-02/01/74	FY73: \$90,469	TOTAL: \$90,469
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, A.	GSFC/Szajna, E. J.	39-Env Sci, NEC
(51-680 641-14-01)		

NAS 9-13332 Michigan State University 2414
Earth resources experiment on Skylab

Period	Obligations	
04/25/72-06/30/74	FY73: \$126,000	TOTAL: \$126,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Manderscheid, L. V.	JSC/Kirby, R. R.	19-Phys Sci, NEC
(72-960 948-63-82)		

NGL 23-004-083 Michigan State University 2415
Use of remote sensing for land use policy formulation

Period	Obligations	
06/08/72-05/31/76	FY73: \$110,000	TOTAL: \$330,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Boylan, M. G.	HQ-PY/Vitale, J. A.	39-Env Sci, NEC
(10-371 340-00-00)		

NGR 23-004-056 Michigan State University 2416
Research and development of lithium-drifted germanium for the detection of intermediate energy protons

Period	Obligations	
07/29/68-11/01/71	FY73: \$2,950	TOTAL: \$75,787
Prin. Invest.	NASA Tech. Officer	CASE Category
Katyal, O.	LERC/Blue, J. W.	13-Physics
(22-704 503-10-04)		

NGR 23-004-068 Michigan State University 2417
The round-jet/plane-wall flow field

Period	Obligations	
07/02/70-09/15/73	FY73:	TOTAL: \$43,715
Prin. Invest.	NASA Tech. Officer	CASE Category
Foss, J. F.	LERC/Albers, J. A.	46-Mech Engr
	LERC/Luidens, R. W.	
(22-702 741-72-04) (22-760 721-56-13) (22-760 721-00-00)		

NGR 23-004-069 Michigan State University 2418
Life detection based on soil atmosphere analysis

Period	Obligations	
08/27/70-06/30/73	FY73: \$30,000	TOTAL: \$96,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Erickson, A. E.	HQ-SL/Young, R. S.	51-Biology
(10-840 192-55-63)		

NGR 23-004-085 Michigan State University 2419
Application of wave mechanics theory to fluid dynamic problems

Period	Obligations	
06/14/72-06/14/74	FY73:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Krzywoblocki, M. Z.	LARC/Weinstein, L. M.	41-Aero Engr
	LARC/Young, W. H., Jr.	
(23-760 136-9X-00)		

NGR 23-004-089 Michigan State University 2420
Experimental investigation of the initial condition effects on a turbulent shear layer

Period	Obligations	
05/09/73-12/31/73	FY73: \$3,000	TOTAL: \$3,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Foss, J. F.	LARC/Morrisette, E. L.	41-Aero Engr
(23-704 501-06-08)		

NGT 23-004-004 Michigan State University 2421
Training of graduate students in space-related science and technology

Period	Obligations	
03/22/63-08/01/72	FY73:	TOTAL: \$854,997
Prin. Invest.	NASA Tech. Officer	CASE Category
Minkel, C. W.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGR 23-054-006 Oakland University 2422
Optical processing of image and multispectral data

Period	Obligations	
06/20/72-05/31/73	FY73:	TOTAL: \$30,432
Prin. Invest.	NASA Tech. Officer	CASE Category
Haskell, R. E.	JSC/Eandi, B. K.	13-Physics
(72-910 914-50-00)		

NGR 23-002-001 University of Detroit 2423
Synthesis of prophine-like substances from simple precursors

Period	Obligations	
11/01/61-11/30/71	FY73:	TOTAL: \$146,707
Prin. Invest.	NASA Tech. Officer	CASE Category
Szutka, A.	HQ-SL/Young, R. S.	12-Chemistry
(10-870 189-00-00)		

NAS 1-9958 University of Michigan - Ann Arbor 2424
A study of the stellar occultation technique for determination of atmospheric composition

Period	Obligations	
05/11/70-11/30/73	FY73: \$1,729	TOTAL: \$70,497
Prin. Invest.	NASA Tech. Officer	CASE Category
Hays, P. B.	LARC/Reichle, H. G.	31-Atmos Sci
(23-620 630-52-00) (23-620 630-00-00)		

NASA'S UNIVERSITY PROGRAM **MICHIGAN (Continued)**

NAS 2-6015 **University of Michigan - Ann Arbor** **2425**
Earth resources survey

Period	Obligations	
06/19/70-09/01/71	FY73: \$6,000	TOTAL: \$57,316
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Anding, D. C.	ARC/Arversen, J. C.	39-Env Sci, NEC
(21-704 501-24-20)		

NAS 2-6057 **University of Michigan - Ann Arbor** **2426**
Vestibular research in space

Period	Obligations	
06/30/70-08/31/72	FY73: \$39,884	TOTAL: \$108,787
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Von Baumgarten, R. J.	ARC/Schillinger, G.	61-Biol Aspects
Baldrighi, G. G.	ARC/Tremor, J. W.	
(21-970 970-21-61)	(21-870 883-12-00)	

NAS 5-9306 **University of Michigan - Ann Arbor** **2427**
Fabrication, instrumentation for electron temperature and density probe experiment for Orbiting Geophysical Observatory mission F /OGO-F/

Period	Obligations	
11/18/64-03/01/72	FY73:	TOTAL: \$527,739
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reber, C. A.	GSFC/Meese, K. J.	13-Physics
(51-850 841-00-00)	(51-850 841-12-00)	(51-850 385-50-00)

NAS 5-9328 **University of Michigan - Ann Arbor** **2428**
Neutral atmospheric composition experiment for Orbiting Geophysical Observatory mission F /OGO-F/

Period	Obligations	
05/20/66-06/01/72	FY73:	TOTAL: \$1,147,100
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reber, C. A.	GSFC/Meese, K. J.	13-Physics
(51-850 841-00-00)	(51-850 841-12-00)	(51-850 385-50-00)

NAS 5-11073 **University of Michigan - Ann Arbor** **2429**
Omegatron mass spectrometer system for the San Marco /C/ satellite

Period	Obligations	
06/30/67-08/31/74	FY73: \$53,721	TOTAL: \$659,541
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Spencer, N. W.	13-Physics
(51-850 894-12-00)		

NAS 5-11128 **University of Michigan - Ann Arbor** **2430**
Two flight tests of a quadrupole mass spectrometer system

Period	Obligations	
06/06/69-06/30/74	FY73: \$63,000	TOTAL: \$339,523
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Niemann, H. B.	31-Atmos Sci
	GSFC/Cooley, J. E.	
(51-850 841-12-00)	(51-840 185-47-54)	(51-840 186-68-63)

NAS 5-11174 **University of Michigan - Ann Arbor** **2431**
IMP-I radio astronomy experiment

Period	Obligations	
05/08/69-08/31/73	FY73: \$62,000	TOTAL: \$362,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Haddock, F. T.	GSFC/Madden, J. J.	13-Physics
(51-850 861-52-00)		

NAS 5-11309 **University of Michigan - Ann Arbor** **2432**
Aeros A-2 neutral atmosphere temperature experiment

Period	Obligations	
06/30/70-08/15/75	FY73: \$166,332	TOTAL: \$654,392
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Pelz, D. T.	11-Astronomy
Caldwell, J.		
(51-850 874-32-00)		

NAS 5-11376 **University of Michigan - Ann Arbor** **2433**
Ae-C, D, & E Pelz experiment

Period	Obligations	
01/07/71-01/01/74	FY73: \$242,800	TOTAL: \$712,750
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. R.	GSFC/Pelz, D. T.	31-Atmos Sci
	GSFC/Spencer, N. W.	
(51-850 852-22-00)		

NAS 5-11380 **University of Michigan - Ann Arbor** **2434**
Ae-C, D, and E neutral temperature experiment

Period	Obligations	
02/03/71-03/15/75	FY73: \$156,500	TOTAL: \$525,818
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P.	GSFC/Spencer, N. W.	31-Atmos Sci
	GSFC/Grimes, D. W.	
(51-850 852-22-00)		

NAS 5-21038 **University of Michigan - Ann Arbor** **2435**
A program of aeronomical research utilizing the thermosphere probe

Period	Obligations	
06/17/69-07/31/74	FY73: \$65,000	TOTAL: \$880,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Carignan, G. B.	GSFC/Spencer, N. W.	31-Atmos Sci
(51-850 879-11-00)		

NAS 5-21147 **University of Michigan - Ann Arbor** **2436**
Pitot tube rocket payloads

Period	Obligations	
03/02/70-07/15/73	FY73:	TOTAL: \$679,686
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Horvath, R.	GSFC/Wright, D. U., Jr.	31-Atmos Sci
(51-680 607-12-00)	(51-680 607-00-00)	

NAS 5-21914 **University of Michigan - Ann Arbor** **2437**
Feasibility study to develop a nitric oxide detector for upper atmosphere research

Period	Obligations	
03/07/73-06/07/73	FY73: \$12,000	TOTAL: \$12,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mason, C. J.	GSFC/Theon, J. S.	31-Atmos Sci
	GSFC/Smith, W. S.	
(51-680 607-12-00)		

NAS 5-23006 **University of Michigan - Ann Arbor** **2438**
Atmosphere Explorer visual airglow photometer

Period	Obligations	
08/24/71-08/20/75	FY73: \$230,000	TOTAL: \$630,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hays, P. M.	GSFC/Findlay, J. A.	31-Atmos Sci
	GSFC/Grimes, D. W.	
(51-850 852-22-00)		

**NASA'S UNIVERSITY PROGRAM
MICHIGAN (Continued)**

NAS 5-23230 **University of Michigan - Ann Arbor** **2439**
Program of aeronautical research utilizing thermosphere probe

Period	Obligations	
06/18/73-06/18/76	FY73: \$85,000	TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	GSFC/	41-Aero Engr

(51-850 879-11-00)

NAS 5-23267 **University of Michigan - Ann Arbor** **2440**
Pulse circuitry for application to spark chambers

Period	Obligations	
06/21/73-06/30/74	FY73: \$9,354	TOTAL: \$9,354
Prin. Invest.	NASA Tech. Officer	CASE Category
	GSFC/	45-Elec Engr

(51-850 188-78-51)

NAS 6-2058 **University of Michigan - Ann Arbor** **2441**
Multispectral scanner data

Period	Obligations	
10/04/71-05/03/72	FY73:	TOTAL: \$13,060
Prin. Invest.	NASA Tech. Officer	CASE Category
Thompson, F. J.	WS/Everton, E. R.	39-Env Sci, NEC
	WS/Maurer, H. E.	

(53-680 160-75-77)

NAS 8-20228 **University of Michigan - Ann Arbor** **2442**
Investigation and study of transient heat transfer

Period	Obligations	
06/30/65-08/31/73	FY73: \$4,000	TOTAL: \$370,004
Prin. Invest.	NASA Tech. Officer	CASE Category
Merte, H., Jr.	MSFC/Littles, J. W.	49-Engr, NEC
	MSFC/Birdwell, B. R.	

(62-710 113-31-12) (62-910 933-33-00) (62-910 933-50-00)

NAS 8-21086 **University of Michigan - Ann Arbor** **2443**
Space probe and test of an orbital density measuring instrument

Period	Obligations	
06/06/67-12/01/71	FY73:	TOTAL: \$332,123
Prin. Invest.	NASA Tech. Officer	CASE Category
Carignan, G. R.	MSFC/Smith, R. E.	31-Atmos Sci

(62-910 933-50-00) (62-750 125-00-00) (62-850 188-00-00)

NAS 8-26929 **University of Michigan - Ann Arbor** **2444**
Optimization of a boundary value problem

Period	Obligations	
03/08/71-06/01/72	FY73:	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Powers, W. F.	MSFC/Inghan, H. L.	21-Mathematics
	MSFC/Causey, W. E.	

(62-750 125-17-14)

NAS 8-28294 **University of Michigan - Ann Arbor** **2445**
Potential environment problems relative to the space shuttle operations

Period	Obligations	
04/06/72-01/05/74	FY73: \$49,984	TOTAL: \$99,967
Prin. Invest.	NASA Tech. Officer	CASE Category
Cicerone, R. J.	MSFC/Devries, L. L.	13-Physics
	MSFC/Kaufman, J. W.	

(62-980 909-52-47) (62-980 908-52-47)

NAS 8-28592 **University of Michigan - Ann Arbor** **2446**
Airglow research

Period	Obligations	
03/24/72-03/23/73	FY73:	TOTAL: \$18,245
Prin. Invest.	NASA Tech. Officer	CASE Category
McWatters, K. D.	MSFC/Smith, R. E.	41-Aero Engr
	MSFC/West, G. S.	

(62-850 188-36-56)

NAS 9-12872 **University of Michigan - Ann Arbor** **2447**
Investigate and apply the function space Davidson method to the shuttle reentry optimization method

Period	Obligations	
06/21/72-01/01/74	FY73: \$4,997	TOTAL: \$24,954
Prin. Invest.	NASA Tech. Officer	CASE Category
Powers, W. F.	JSC/Johnson, I. L.	99-Multi-Discip

(72-950 952-25-00)

NGL 23-005-005 **University of Michigan - Ann Arbor** **2448**
Research on heat resistant alloys for use in supersonic aircrafts

Period	Obligations	
12/15/60-03/01/74	FY73:	TOTAL: \$598,007
Prin. Invest.	NASA Tech. Officer	CASE Category
Wilson, D. J.	LERC/Freche, J. C.	47-Materials Engr
	LERC/Harf, F. H.	

(10-740 129-00-00) (22-760 720-00-00) (22-740 129-03-20)

NGL 23-005-010 **University of Michigan - Ann Arbor** **2449**
Structural analysis of aircraft tires

Period	Obligations	
02/01/63-12/01/74	FY73: \$30,000	TOTAL: \$357,731
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, S. R.	LARC/McCarty, J. L.	41-Aero Engr

(23-740 114-08-05) (23-742 124-08-31) (23-760 126-61-12)

NGL 23-005-183 **University of Michigan - Ann Arbor** **2450**
Microwave device investigations

Period	Obligations	
12/09/69-09/01/73	FY73:	TOTAL: \$440,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Haddad, G. I.	GSFC/Hughes, W. E.	45-Elec Engr

(25-750 125-00-00) (51-750 125-00-00) (51-750 125-21-06)

NGL 23-005-275 **University of Michigan - Ann Arbor** **2451**
Solar research program of McMath-Hulbert Observatory and improvement of photoheliographic telescope

Period	Obligations	
04/08/68-03/01/75	FY73: \$30,000	TOTAL: \$405,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mohler, O. C.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	

(10-850 188-00-00) (10-850 188-38-52)

NGL 23-005-336 **University of Michigan - Ann Arbor** **2452**
Two phase detonation as related to rocket motor combustion instability

Period	Obligations	
04/11/69-01/01/75	FY73:	TOTAL: \$342,405
Prin. Invest.	NASA Tech. Officer	CASE Category
Nicholls, J. A.	LERC/Priem, R. J.	46-Mech Engr

(22-710 128-00-00) (22-710 128-31-90) (22-710 113-31-08)

NASA'S UNIVERSITY PROGRAM **MICHIGAN (Continued)**

NGR 23-005-015 **University of Michigan - Ann Arbor** **2453**
 Theoretical investigation of space charge waves in ionosphere and space plasma sheaths

Period	Obligations	
10/28/63-06/30/73	FY73: \$95,000	TOTAL: \$787,805
Prin. Invest.	NASA Tech. Officer	CASE Category
Nagy, A. F.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Hallenbeck, D. R.	

(10-850 188-36-56)

NGR 23-005-094 **University of Michigan - Ann Arbor** **2454**
 An investigation of plasma kinetics, with emphasis on the interaction between rarefied plasmas and moving bodies

Period	Obligations	
06/26/64-04/30/74	FY73: \$30,484	TOTAL: \$253,326
Prin. Invest.	NASA Tech. Officer	CASE Category
Liu, V. C.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	

(10-840 185-47-81) (10-840 185-00-00) (10-850 841-00-00)

NGR 23-005-151 **University of Michigan - Ann Arbor** **2455**
 Experiment definition for the orbital plasma physics and environmental perturbation laboratory

Period	Obligations	
02/15/72-02/01/73	FY73:	TOTAL: \$18,097
Prin. Invest.	NASA Tech. Officer	CASE Category
Samir, U.	MSFC/Roberts, W. T.	31-Atmos Sci

(62-980 975-84-39)

NGR 23-005-185 **University of Michigan - Ann Arbor** **2456**
 Application of new bioelectronics to cardiovascular stresses

Period	Obligations	
05/13/66-05/31/73	FY73: \$17,875	TOTAL: \$228,200
Prin. Invest.	NASA Tech. Officer	CASE Category
French, J. R., Jr.	HQ-JG/Arnoldi, L. B.	52-Clinical Med
	HQ-JG/Mockbee, J.	

(10-030 016-00-00) (10-030 039-00-00)

NGR 23-005-201 **University of Michigan - Ann Arbor** **2457**
 Study weightlessness & otolith function

Period	Obligations	
02/01/68-06/30/73	FY73:	TOTAL: \$115,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Von Baumgarten A, R.	ARC/Shillinger, G. L.	61-Biol Aspects

(10-870 189-00-00) (21-870 189-52-62) (10-870 189-52-62)

NGR 23-005-320 **University of Michigan - Ann Arbor** **2458**
 Theoretical and experimental studies of spacecraft space plasma interactions

Period	Obligations	
01/29/69-07/31/73	FY73: \$45,000	TOTAL: \$207,557
Prin. Invest.	NASA Tech. Officer	CASE Category
Samir, U.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Hallenbeck, D. R.	

(10-850 188-36-56)

NGR 23-005-360 **University of Michigan - Ann Arbor** **2459**
 A program in aeronomy

Period	Obligations	
12/29/69-08/31/73	FY73:	TOTAL: \$608,101
Prin. Invest.	NASA Tech. Officer	CASE Category
Hays, P. B.	HQ-SG/Dubin, M.	31-Atmos Sci
	HQ-SG/Schmerling, E. R.	

(10-850 879-11-00) (10-850 879-00-00) (10-850 385-00-00)

NGR 23-005-417 **University of Michigan - Ann Arbor** **2460**
 Determination of heat generation mechanisms in aircraft tires

Period	Obligations	
05/14/70-05/31/73	FY73:	TOTAL: \$105,476
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, S. K.	LERC/Miller, C. D.	41-Aero Engr
Staples, R.		

(22-763 133-61-12) (22-760 126-00-00)

NGR 23-005-427 **University of Michigan - Ann Arbor** **2461**
 Study of genetic direct search algorithms for function optimization

Period	Obligations	
10/01/70-09/30/72	FY73:	TOTAL: \$34,373
Prin. Invest.	NASA Tech. Officer	CASE Category
Zeigler, B. P.	LARC/Tripp, J. S.	49-Engr, NEC
	LARC/Russell, C. H.	

(23-750 125-24-04) (23-760 136-63-03)

NGR 23-005-463 **University of Michigan - Ann Arbor** **2462**
 Theory of reliable systems

Period	Obligations	
06/02/71-05/01/73	FY73:	TOTAL: \$44,658
Prin. Invest.	NASA Tech. Officer	CASE Category
Meyer, J. F.	LARC/Bavuso, S. J.	45-Elec Engr
	LARC/Murray, W. D.	

(10-740 129-04-21) (10-750 115-04-60)

NGR 23-005-464 **University of Michigan - Ann Arbor** **2463**
 Optical studies of galactic X-ray sources

Period	Obligations	
03/02/71-02/28/74	FY73: \$13,880	TOTAL: \$41,992
Prin. Invest.	NASA Tech. Officer	CASE Category
Hiltner, W. A.	HQ-SG/Kelsall, T.	11-Astronomy
	HQ-SG/Roman, N. G.	

(10-850 385-41-00) (10-850 188-41-51)

NGR 23-005-470 **University of Michigan - Ann Arbor** **2464**
 Transmissivity of carbon monoxide

Period	Obligations	
03/12/71-02/01/72	FY73:	TOTAL: \$15,454
Prin. Invest.	NASA Tech. Officer	CASE Category
Bartman, F. L.	LARC/Russell, J. M., III	31-Atmos Sci

(23-680 160-20-56)

NGR 23-005-477 **University of Michigan - Ann Arbor** **2465**
 Antenna array research

Period	Obligations	
03/17/71-06/30/73	FY73:	TOTAL: \$56,505
Prin. Invest.	NASA Tech. Officer	CASE Category
Tai, C. T.	LARC/Croswell, W. F.	45-Elec Engr
	LARC/Beck, F. B.	

(23-620 636-18-71) (23-680 160-20-54)

NGR 23-005-487 **University of Michigan - Ann Arbor** **2466**
 Psychophysiological studies of thirst and fluid regulation

Period	Obligations	
07/22/71-11/01/73	FY73: \$29,000	TOTAL: \$62,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Valenstein, E. S.	ARC/Vernikos-Danell, J.	69-Psych, NEC
	ARC/Goodwin, A. L.	

(21-970 970-21-52)

NASA'S UNIVERSITY PROGRAM
MICHIGAN (Continued)

NGR 23-005-523 University of Michigan - Ann Arbor 2467
 Study of flow near the foot of a weak shock terminating a region of supersonic flow

Period	Obligations	
04/20/72-04/30/74	FY73: \$30,000	TOTAL: \$57,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Sichel, M.	LARC/Czarnecki, K. R.	41-Aero Engr
Adamson, T. C., Jr.		
(23-702 760-64-60)		

NGR 23-005-528 University of Michigan - Ann Arbor 2468
 Fiber-reinforced solids possessing great fracture toughness & the role of interfacial strength

Period	Obligations	
07/26/72-08/01/74	FY73: \$29,379	TOTAL: \$29,379
Prin. Invest.	NASA Tech. Officer	CASE Category
Atkins, A. G.	LARC/Fichter, W. B.	46-Mech Engr
(23-704 501-22-02)		

NGR 23-005-536 University of Michigan - Ann Arbor 2469
 Ignition of metals, lubricants, and contaminants in oxygen-rich atmospheres

Period	Obligations	
07/01/72-06/01/73	FY73: \$45,400	TOTAL: \$45,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Nicholls, J. A.	LERC/Priem, R. J.	46-Mech Engr
Adamson, T. C.		
Sichel, M.		
(22-704 502-28-04)		

NGR 23-005-537 University of Michigan - Ann Arbor 2470
 Application of Mossbauer spectroscopy to the determination of source material and thermal histories of tektites

Period	Obligations	
06/23/72-05/31/73	FY73:	TOTAL: \$22,494
Prin. Invest.	NASA Tech. Officer	CASE Category
Evans, B. J.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-MA/Pomeroy, J. H.	
(10-810 195-42-67)		

NGR 23-005-538 University of Michigan - Ann Arbor 2471
 Transmissivity of the 2935 YM carbon monoxide band

Period	Obligations	
11/16/71-11/30/72	FY73: \$5,090	TOTAL: \$20,100
Prin. Invest.	NASA Tech. Officer	CASE Category
Bartman, F. L.	LARC/Russell, J. M., III	31-Atmos Sci
(23-680 160-44-64)	(23-680 160-20-56)	

NGR 23-005-540 University of Michigan - Ann Arbor 2472
 Experimental and theoretical study of sound from meteors

Period	Obligations	
01/07/72-12/31/73	FY73: \$20,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bartman, F. L.	HQ-SG/Dubin, M.	31-Atmos Sci
(10-850 188-45-52)		

NGR 23-005-543 University of Michigan - Ann Arbor 2473
 Basic research in solar physics

Period	Obligations	
11/17/72-08/01/73	FY73: \$15,664	TOTAL: \$15,664
Prin. Invest.	NASA Tech. Officer	CASE Category
Teske, R. G.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-52)		

NGR 23-005-548 University of Michigan - Ann Arbor 2474
 Missions definition for planetary Explorer missions

Period	Obligations	
03/01/72-09/30/72	FY73:	TOTAL: \$5,395
Prin. Invest.	NASA Tech. Officer	CASE Category
Nagy, A. F.	HQ-SL/Fellows, R. F.	31-Atmos Sci
(10-840 186-68-63)		

NGR 23-005-549 University of Michigan - Ann Arbor 2475
 OGO-V solar radio burst analysis

Period	Obligations	
08/22/72-07/01/73	FY73: \$49,993	TOTAL: \$49,993
Prin. Invest.	NASA Tech. Officer	CASE Category
Haddock, F. T.	HQ-SG/Oertel, G. K.	11-Astronomy
	GSFC/Maran, S. P.	
(10-850 385-38-00)		

NGR 23-005-559 University of Michigan - Ann Arbor 2476
 Photochemistry of the upper atmosphere

Period	Obligations	
06/27/72-05/31/73	FY73:	TOTAL: \$27,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Stolarski, R. S.	JSC/Eandi, B. K.	31-Atmos Sci
(72-910 914-50-00)		

NGR 23-005-561 University of Michigan - Ann Arbor 2477
 OGO-VI data analysis

Period	Obligations	
08/07/72-06/01/73	FY73: \$60,000	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Carignan, G. R.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 384-47-81)		

NGR 23-005-563 University of Michigan - Ann Arbor 2478
 Studies on the polar CO2 ice caps of Mars

Period	Obligations	
06/23/72-06/30/73	FY73:	TOTAL: \$19,186
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, C. I.	HQ-SL/Dwornik, S. E.	32-Geological Sci
Eschman, D. F.	HQ-SL/Allingham, J. W.	
Clark, B. R.		
(10-840 185-50-81)		

NGR 23-005-599 University of Michigan - Ann Arbor 2479
 Determination of hydrochloride in air

Period	Obligations	
05/09/73-11/30/73	FY73: \$13,000	TOTAL: \$13,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Stedman, D. H.	LARC/Lanford, W. E.	12-Chemistry
(23-830 180-72-50)		

NGR 23-005-602 University of Michigan - Ann Arbor 2480
 Study of genetic direct-search algorithms for function optimization

Period	Obligations	
04/23/73-04/22/74	FY73: \$15,190	TOTAL: \$15,190
Prin. Invest.	NASA Tech. Officer	CASE Category
Zeigler, B. P.	LARC/Tripp, J. S.	49-Engr, NEC
(23-701 599-85-00)		

NASA'S UNIVERSITY PROGRAM **MICHIGAN (Continued)**

NGT 23-005-018 **University of Michigan - Ann Arbor** **2481**
 Training of graduate students in space-related science and technology

Period	FY73:	Obligations
04/01/62-08/01/72		TOTAL: \$1,358,089
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hay, G. E.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NSR 23-005-364 **University of Michigan - Ann Arbor** **2482**
 Analysis & synthesis of manual control system

Period	FY73:	Obligations
04/21/70-12/31/73		TOTAL: \$257,617
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Howe, R. M.	LARC/Adams, J. A.	99-Multi-Discip
Pew, R. W.		
(10-750 125-00-00)	(23-770 137-51-02)	(23-770 127-00-00)

NSR 23-005-376 **University of Michigan - Ann Arbor** **2483**
 High altitude radiation measurements

Period	FY73:	Obligations
05/04/70-11/30/72	\$49,997	TOTAL: \$452,673
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bartman, F. L.	GSFC/Wexler, R.	31-Atmos Sci
Kuhn, W. R.		
Chaney, L. W.		
(51-680 160-44-54)	(51-680 160-00-00)	

NSR 23-005-480 **University of Michigan - Ann Arbor** **2484**
 Seventh International Symposium on remote sensing of the environment

Period	FY73:	Obligations
05/27/71-11/01/71		TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cook, J. J.	HQ-ER/Park, A. B.	39-Env Sci, NEC
	HQ-ER/Ahmajian, A. M.	
(10-680 160-88-50)		

NAS 8-24810 **Wayne State University** **2485**
 Conceptual & operational feasibility of laser Doppler detection systems

Period	FY73:	Obligations
06/01/69-06/01/72		TOTAL: \$131,388
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thomson, J. A.	MSFC/Huffaker, R. M.	13-Physics
(62-760 126-00-00)	(62-760 126-61-13)	

NAS 8-29823 **Wayne State University** **2486**
 Electrophoretic separation of proteins in space

Period	FY73:	Obligations
05/15/73-03/15/74	\$50,880	TOTAL: \$50,880
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Brown, R. K.	MSFC/Krupnick, A. C.	51-Biology
	MSFC/Allen, R. E.	
(62-980 975-90-95)		

NGR 23-006-057 **Wayne State University** **2487**
 Study of effects of guard ring structures of excess junction current in silicon solar cells

Period	FY73:	Obligations
03/10/72-03/31/74	\$13,961	TOTAL: \$26,814
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wang, E. Y.	LERC/Brandhorst, H. W.	13-Physics
	LERC/Bernatowicz, D. T.	
(22-704 502-05-50)		

NGT 23-006-001 **Wayne State University** **2488**
 Training of predoctoral graduate students in space-related sciences & technology

Period	FY73:	Obligations
03/16/64-08/01/72		TOTAL: \$308,161
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burnham, F. B.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NSR 23-006-037 **Wayne State University** **2489**
 Effort to enhance the transfer of NASA-generated technology to other agencies of the government

Period	FY73:	Obligations
01/01/67-12/01/77		TOTAL: \$7,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Prince, B. W.	HQ-KT/	99-Multi-Discip
(10-250 141-00-00)		

MINNESOTA

NAS 1-9697 **Univ of Minnesota - Minneapolis-St Paul** **2490**
 Participation in the science planning for the Viking 1975 missions in the area of entry science

Period	FY73:	Obligations
03/20/70-03/31/77	\$105,401	TOTAL: \$193,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nier, A. O.	LARC/Soffen, G. A.	31-Atmos Sci
(23-840 815-20-00)		

NAS 1-10511 **Univ of Minnesota - Minneapolis-St Paul** **2491**
 An engineering model of mass spectrometer and encoder for dual air density Explorer satellites

Period	FY73:	Obligations
01/12/71-10/31/72		TOTAL: \$196,515
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nier, A. O.	LARC/Melfi, L. T.	31-Atmos Sci
Mauersberger, K.		
(23-850 863-11-00)		

NAS 1-11676 **Univ of Minnesota - Minneapolis-St Paul** **2492**
 Fabrication, testing, and calibration of flight mass spectrometers for dual air density project

Period	FY73:	Obligations
06/16/72-08/26/75	\$289,732	TOTAL: \$359,732
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nier, A. O.	LARC/Melfi, L. T.	31-Atmos Sci
Mauersberger, K.	LARC/Prior, E. J.	
(23-850 863-11-00)		

NAS 3-13200 **Univ of Minnesota - Minneapolis-St Paul** **2493**
 Research to develop a theory for film-cooling by injection of air into a gas stream through small holes in the wall

Period	FY73:	Obligations
06/02/69-12/01/71		TOTAL: \$89,804
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eckert, E. R.	LERC/Stepka, F. S.	47-Materials Engr
(22-762 764-74-05)		

NASA'S UNIVERSITY PROGRAM MINNESOTA (Continued)

NAS 5-3838 Univ of Minnesota - Minneapolis-St Paul 2494
Zodiacal light experiment

Period	Obligations	
06/25/64-07/31/73	FY73: \$36,000	TOTAL: \$489,581
Prin. Invest.	NASA Tech. Officer	CASE Category
Epney, O.	GSFC/Staff, W. O.	13-Physics
(51-850 821-22-00)		

NAS 5-11060 Univ of Minnesota - Minneapolis-St Paul 2495
Electromagnetic fields experiment for IMP-I

Period	Obligations	
03/14/68-06/30/73	FY73: \$43,000	TOTAL: \$646,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Kellogg, P. J.	GSFC/Madden, J. J.	13-Physics
Cartwright, D. G.		
(51-850 861-52-00)		

NAS 5-11173 Univ of Minnesota - Minneapolis-St Paul 2496
Magnetic fields experiment for S3

Period	Obligations	
10/22/68-11/15/73	FY73: \$50,000	TOTAL: \$341,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Cahill, L. J., Jr.	GSFC/Longanecker, G. W.	13-Physics
Pate, V. L.		
(51-850 857-12-00)		

NAS 5-11310 Univ of Minnesota - Minneapolis-St Paul 2497
Helios AC electric fields experiment

Period	Obligations	
06/29/70-03/15/75	FY73: \$179,145	TOTAL: \$841,555
Prin. Invest.	NASA Tech. Officer	CASE Category
Kellogg, P. J.	GSFC/White, C. E.	13-Physics
Cartwright, D. G.		
(51-840 823-12-00)		

NAS 5-11438 Univ of Minnesota - Minneapolis-St Paul 2498
Open source neutral mass spectrometers for AE spacecraft, missions C, D, & E

Period	Obligations	
06/15/71-06/30/74	FY73: \$250,000	TOTAL: \$572,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Nier, A. O.	GSFC/Findlay, J. A.	31-Atmos Sci
	GSFC/Grimes, D. W.	
(51-850 852-22-00)		

NAS 5-11687 Univ of Minnesota - Minneapolis-St Paul 2499
Study of particle acceleration mechanisms for the ATS-F

Period	Obligations	
05/21/69-05/30/76	FY73: \$35,583	TOTAL: \$550,683
Prin. Invest.	NASA Tech. Officer	CASE Category
Winckler, J. R.	GSFC/Wainscott, F. H.	49-Engr, NEC
(51-620 630-22-00)		

NAS 5-23273 Univ of Minnesota - Minneapolis-St Paul 2500
Data reduction & analysis from electromagnetic field experiment aboard the IMP-I satellite

Period	Obligations	
06/29/73-10/29/73	FY73: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	GSFC/	13-Physics
(51-850 861-52-00)		

NAS 8-26845 Univ of Minnesota - Minneapolis-St Paul 2501
Large area cosmic ray detector for extremely heavy nuclei

Period	Obligations	
02/01/71-04/01/72	FY73:	TOTAL: \$105,220
Prin. Invest.	NASA Tech. Officer	CASE Category
Waddington, C. J.	MSFC/Krome, H. O.	11-Astronomy
	MSFC/Jones, J. B.	
(62-850 832-12-00) (62-850 188-78-53)		

NAS 8-27977 Univ of Minnesota - Minneapolis-St Paul 2502
Design, development, & operation of Cerenkov portion of the ACR-7 heavy nuclei experiment under the HEAO program

Period	Obligations	
06/16/72-02/15/78	FY73: \$11,130	TOTAL: \$275,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Waddington, C. J.	MSFC/Krome, H. O.	11-Astronomy
	MSFC/Cochran, J.	
(62-850 832-12-00)		

NAS 9-11367 Univ of Minnesota - Minneapolis-St Paul 2503
Electron beam plasma wave observations

Period	Obligations	
11/12/70-06/01/72	FY73: \$12,912	TOTAL: \$62,912
Prin. Invest.	NASA Tech. Officer	CASE Category
Kellogg, P. J.	JSC/Trichel, M. C.	31-Atmos Sci
(72-850 879-11-00) (72-850 879-10-00) (72-850 879-00-00)		

NAS 9-12338 Univ of Minnesota - Minneapolis-St Paul 2504
Limits of rhythmic variation in normative data

Period	Obligations	
12/17/71-12/01/72	FY73:	TOTAL: \$99,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Halberg, F.	JSC/Rummel, J. A.	59-Life Sci, NEC
(72-910 914-51-00)		

NAS 9-12560 Univ of Minnesota - Minneapolis-St Paul 2505
Storage stability & improvement of intermediate moisture foods

Period	Obligations	
03/23/72-03/17/77	FY73: \$25,000	TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Labuza, T. P.	JSC/Heidelbaugh, N. D.	59-Life Sci, NEC
(72-970 970-52-24) (72-970 970-51-14)		

NAS 9-13405 Univ of Minnesota - Minneapolis-St Paul 2506
Biorythm studies for Skylab missions

Period	Obligations	
03/01/73-03/17/74	FY73: \$50,000	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Halberg, F.	JSC/Rummel, J. A.	51-Biology
(72-970 970-51-14)		

NGL 24-005-008 Univ of Minnesota - Minneapolis-St Paul 2507
Analytic and experimental research in space physics including balloon and rocket flight experiments

Period	Obligations	
08/20/62-06/30/75	FY73: \$242,825	TOTAL: \$4,196,132
Prin. Invest.	NASA Tech. Officer	CASE Category
Winckler, J. R.	HQ-SG/Kavanagh, L. D.	13-Physics
	HQ-SG/Roman, N. G.	
(10-850 188-36-55) (10-850 188-41-55) (10-850 188-00-00)		

NASA'S UNIVERSITY PROGRAM **MINNESOTA (Continued)**

NGL 24-005-009 Univ of Minnesota - Minneapolis-St Paul 2508
Development and application of mass spectrometers to studies of earths upper atmosphere and planetary atmospheres

Period	Obligations
08/01/62-05/31/76	FY73: \$204,978 TOTAL: \$1,175,189
Prin. Invest.	NASA Tech. Officer CASE Category
Nier, A. O.	HQ-SL/Fellows, R. F. 31-Atmos Sci
	HQ-SL/Brunk, W. E.

(10-840 185-47-80)

NGL 24-005-160 Univ of Minnesota - Minneapolis-St Paul 2509
Investigation of environmental microbiology as related to planetary quarantine

Period	Obligations
06/13/68-05/31/76	FY73: \$175,000 TOTAL: \$1,225,000
Prin. Invest.	NASA Tech. Officer CASE Category
Pflug, I. J.	HQ-SL/Hall, L. B. 51-Biology
	HQ-SL/Gallagher, S. G.

(10-840 193-58-61) (10-870 189-00-00) (10-870 191-00-00)

NGL 24-005-225 Univ of Minnesota - Minneapolis-St Paul 2510
Lunar sample analysis

Period	Obligations
01/26/71-01/31/76	FY73: \$86,760 TOTAL: \$285,760
Prin. Invest.	NASA Tech. Officer CASE Category
Pepin, R. O.	JSC/Harris, J. W. 13-Physics

(72-910 914-40-00)

NGL 24-005-263 Univ of Minnesota - Minneapolis-St Paul 2511
Study of Minnesota forests and lakes using data from Earth Resources Technology Satellites

Period	Obligations
07/06/72-06/30/76	FY73: \$150,000 TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer CASE Category
Cahill, L. J., Jr.	HQ-PY/Vitale, J. A. 39-Env Sci, NEC

(10-371 340-00-00)

NGR 24-005-006 Univ of Minnesota - Minneapolis-St Paul 2512
Computer analysis of circadian rhythms

Period	Obligations
07/01/63-06/01/74	FY73: TOTAL: \$692,500
Prin. Invest.	NASA Tech. Officer CASE Category
Halberg, F.	ARC/Winget, C. M. 61-Biol Aspects

(10-870 189-00-00) (21-870 189-52-61) (21-870 189-00-00)

NGR 24-005-050 Univ of Minnesota - Minneapolis-St Paul 2513
Measurement of the gamma ray flux of various celestial point sources from high altitude balloons

Period	Obligations
04/21/65-06/30/73	FY73: \$42,407 TOTAL: \$502,982
Prin. Invest.	NASA Tech. Officer CASE Category
Waddington, C. J.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Kavanagh, L. D., Jr.

(10-850 188-46-54)

NGR 24-005-111 Univ of Minnesota - Minneapolis-St Paul 2514
Electron radar techniques as a probe of the trapped radiation belts

Period	Obligations
09/29/66-09/14/73	FY73: \$100,000 TOTAL: \$529,591
Prin. Invest.	NASA Tech. Officer CASE Category
Winckler, J. R.	HQ-SG/Kavanagh, L. D. 13-Physics
	HQ-SG/Ott, E. J.

(10-850 879-11-00) (10-850 879-00-00)

NGR 24-005-180 Univ of Minnesota - Minneapolis-St Paul 2515
Experiment development and data analysis for Explorer 14 and 26

Period	Obligations
04/10/69-06/30/72	FY73: TOTAL: \$142,230
Prin. Invest.	NASA Tech. Officer CASE Category
Cahill, L. J.	HQ-SG/Kavanagh, L. D., Jr. 13-Physics
	HQ-SG/Schmerling, E. R.

(10-850 385-36-00) (10-850 385-00-00) (10-850 188-36-54)

NGR 24-005-196 Univ of Minnesota - Minneapolis-St Paul 2516
Studying the neutral constituents of the polar atmospheres above 100 km during calendar year 1970

Period	Obligations
03/16/70-12/31/73	FY73: TOTAL: \$210,000
Prin. Invest.	NASA Tech. Officer CASE Category
Nier, A. O.	HQ-SG/Dubin, M. 11-Astronomy
	HQ-SG/Holtz, J. R.

(10-850 879-11-00) (10-850 879-00-00)

NGR 24-005-198 Univ of Minnesota - Minneapolis-St Paul 2517
Fluorescent antibody detection of microorganisms in terrestrial environments

Period	Obligations
08/10/70-12/31/72	FY73: TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer CASE Category
Schmidt, E. L.	HQ-SL/Young, R. S. 51-Biology

(10-840 192-55-63) (10-870 189-55-63)

NGR 24-005-223 Univ of Minnesota - Minneapolis-St Paul 2518
Lunar sample analysis

Period	Obligations
05/22/71-01/31/74	FY73: \$56,250 TOTAL: \$161,750
Prin. Invest.	NASA Tech. Officer CASE Category
Murthy, V. R.	JSC/Harris, J. W. 13-Physics

(72-910 914-40-00)

NGR 24-005-231 Univ of Minnesota - Minneapolis-St Paul 2519
Study of the neutral composition of the lower thermosphere and upper mesosphere

Period	Obligations
12/23/70-07/01/73	FY73: TOTAL: \$154,500
Prin. Invest.	NASA Tech. Officer CASE Category
Nier, A. O.	JSC/Hudson, R. D. 31-Atmos Sci

(72-910 914-50-00) (72-840 185-47-32)

NGR 24-005-248 Univ of Minnesota - Minneapolis-St Paul 2520
Lunar sample analysis

Period	Obligations
08/03/71-01/31/74	FY73: \$49,560 TOTAL: \$134,660
Prin. Invest.	NASA Tech. Officer CASE Category
Banerjee, S. K.	JSC/Harris, J. W. 32-Geological Sci

(72-910 914-40-00)

NGR 24-005-253 Univ of Minnesota - Minneapolis-St Paul 2521
Particle and field studies of the magnetosphere

Period	Obligations
11/01/71-12/29/74	FY73: \$86,186 TOTAL: \$216,186
Prin. Invest.	NASA Tech. Officer CASE Category
Cahill, L. J.	HQ-SG/Kavanagh, L. D., Jr. 13-Physics
	HQ-SG/Ott, E.

(10-850 879-11-00)

NASA'S UNIVERSITY PROGRAM **MINNESOTA (Continued)**

NGR 24-005-267 Univ of Minnesota - Minneapolis-St Paul 2522
Photometric investigation of wavelength dependence of radiation from objects, showing excess long wave radiation (10 to 30 microns)

Period	Obligations	
02/26/73-02/28/74	FY73: \$29,000	TOTAL: \$29,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ney, E. P.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M., Jr.	

(21-850 352-02-03)

NGR 24-005-275 Univ of Minnesota - Minneapolis-St Paul 2523
Iodine 129 as a possible factor in prebiotic synthesis of biopolymers

Period	Obligations	
04/25/73-03/31/74	FY73: \$4,008	TOTAL: \$4,008
Prin. Invest.	NASA Tech. Officer	CASE Category
Swain, F. M.	HQ-SL/Young, R. S.	12-Chemistry

(10-840 192-55-61)

NGT 24-005-012 Univ of Minnesota - Minneapolis-St Paul 2524
Training of graduate students in space-related science and technology

Period	Obligations	
04/01/62-08/01/72	FY73:	TOTAL: \$1,450,131
Prin. Invest.	NASA Tech. Officer	CASE Category
Crawford, B., Jr.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NGT 24-005-078 Univ of Minnesota - Minneapolis-St Paul 2525
Training of predoctoral graduate students in space sciences and technology

Period	Obligations	
06/24/65-08/01/78	FY73:	TOTAL: \$17,844
Prin. Invest.	NASA Tech. Officer	CASE Category
Anderson, G. W.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NSR 24-005-238 Univ of Minnesota - Minneapolis-St Paul 2526
Development of a photometer system for use with the 91 cm IR telescope

Period	Obligations	
06/13/72-12/31/73	FY73:	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ney, E. P.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Bader, M.	

(10-850 352-03-00)

NSR 24-005-245 Univ of Minnesota - Minneapolis-St Paul 2527
Study of the proper motion of stars using the automated proper motion system

Period	Obligations	
01/13/72-11/30/73	FY73: \$49,996	TOTAL: \$172,753
Prin. Invest.	NASA Tech. Officer	CASE Category
Luyten, W. J.	HQ-SG/Roman, N. G.	11-Astronomy
	GSFC/Mead, J. M.	

(10-850 188-41-51)

MISSISSIPPI

NGR 25-011-001 Jackson State College 2528
Research in marshland ecology

Period	Obligations	
05/12/72-05/31/74	FY73: \$19,897	TOTAL: \$37,097
Prin. Invest.	NASA Tech. Officer	CASE Category
Nelson, F.	HQ-PY/Pohly, J. G.	51-Biology
	MTF/Mooneyham, D. W.	

(10-371 340-00-00)

NGR 25-011-002 Jackson State College 2529
Aquatic plants as filtration systems for photographic waste

Period	Obligations	
06/29/72-06/30/73	FY73: \$20,600	TOTAL: \$35,115
Prin. Invest.	NASA Tech. Officer	CASE Category
Perkins, J.	HQ-PY/Pohly, J. G.	61-Biol Aspects
	MTF/Wolverton, B. C.	

(10-371 340-00-00)

NAS 5-21817 Mississippi State University 2530
ERTS-A data user for land use planning

Period	Obligations	
08/11/72-06/01/74	FY73: \$24,138	TOTAL: \$24,138
Prin. Invest.	NASA Tech. Officer	CASE Category
Ingels, F. M.	GSFC/Stonesifer, G. R.	32-Geological Sci

(51-680 641-14-08)

NAS 5-21881 Mississippi State University 2531
ERTS-A data users investigation for the study of applications of remote sensing data to agricultural practices in the Mississippi delta region

Period	Obligations	
10/27/72-05/01/74	FY73: \$70,000	TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bouchillon, C. W.	GSFC/Stonesifer, G. R.	39-Env Sci, NEC

Shepard, C. G.

(51-680 641-14-01)

NAS 8-11497 Mississippi State University 2532
Study of the economic impact of the NASA-MTO on the immediate MTO area

Period	Obligations	
09/01/65-04/01/76	FY73:	TOTAL: \$8,312
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	72-Economics

(62-910 933-50-00)

NAS 8-21377 Mississippi State University 2533
Investigation in adaptive sampling and optimum sampling procedures

Period	Obligations	
05/15/68-09/01/72	FY73:	TOTAL: \$109,991
Prin. Invest.	NASA Tech. Officer	CASE Category
McDaniel, W. L., Jr.	MSFC/Guynes, B. V.	45-Elec Engr
	MSFC/Valley, D. P.	

(62-980 908-51-00)

(62-980 908-51-08) (62-750 125-00-00)

NASA'S UNIVERSITY PROGRAM **MISSISSIPPI (Continued)**

NAS 8-26749 **Mississippi State University** **2534**
A study of trends and techniques for space base electronics

Period	Obligations	
01/12/71-01/11/74	FY73: \$15,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Gassaway, J. D.	MSFC/Hollis, B. R., Jr.	49-Engr, NEC
	MSFC/Kennedy, B. W.	
(62-704 502-23-51)	(62-750 125-25-08)	

NAS 8-28833 **Mississippi State University** **2535**
Integration schemes of equations of motion

Period	Obligations	
05/17/72-05/16/73	FY73:	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Thompson, J. F.	MSFC/Glaese, J. R.	41-Aero Engr
	MSFC/Buchanan, H. J.	
(62-980 908-54-08)		

NAS 8-29036 **Mississippi State University** **2536**
Application of Saturn/Apollo automated data system capabilities to problems of environmental impacts of urban transportation

Period	Obligations	
06/16/72-06/15/73	FY73:	TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer	CASE Category
McKee, J. C., Jr.	MSFC/McDonough, G. F.	39-Env Sci, NEC
	MSFC/Daniels, J. L., Jr.	
(62-910 933-50-00)		

NAS 9-11607 **Mississippi State University** **2537**
Earth resources data & technology studies

Period	Obligations	
03/11/71-01/31/72	FY73:	TOTAL: \$99,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Bouchillon, C. W.	MTF/Mooneyhan, D. W.	39-Env Sci, NEC
(72-680 160-75-85)		

NAS 9-13363 **Mississippi State University** **2538**
Study of application of Skylab EREP data to agriculture in the Mississippi delta alluvial plains region Skylab EREP investigation no. 339

Period	Obligations	
04/23/73-08/31/74	FY73: \$45,000	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bouchillon, C. W.	MTF/Mooneyhan, D. W.	99-Multi-Discip
Ingels, F. M.		
(72-960 948-63-82)		

NGL 25-001-028 **Mississippi State University** **2539**
Multidisciplinary research on the environment and on energy sources

Period	Obligations	
02/26/69-07/31/73	FY73:	TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bouchillon, C. W.	HQ-PY/Redding, E. R.	59-Life Sci, NEC
	MSFC/Balch, J.	
(10-370 183-00-00)		

NGL 25-001-032 **Mississippi State University** **2540**
Special support of Saturn/Apollo utilizing Mississippi test facility

Period	Obligations	
03/06/69-01/01/73	FY73:	TOTAL: \$275,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bouchillon, C. W.	MSFC/Kent, M. I.	99-Multi-Discip
(62-910 933-50-00)		

NGL 25-001-040 **Mississippi State University** **2541**
Interdisciplinary program in earth resource and environmental research

Period	Obligations	
05/07/71-01/01/75	FY73:	TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Brown, L. R.	HQ-PY/Redding, E. R.	39-Env Sci, NEC
	MSFC/Kent, M. I.	
(10-371 340-00-00)		

NGR 25-001-050 **Mississippi State University** **2542**
Stiffness and damping of inherently compensated gas thrusting bearing with finite square geometry

Period	Obligations	
01/30/73-12/31/73	FY73: \$8,640	TOTAL: \$8,640
Prin. Invest.	NASA Tech. Officer	CASE Category
Stiffler, A. K.	LERC/Fleming, D. P.	46-Mech Engr
	LERC/Cunningham, R. E.	
(22-704 501-24-10)		

NGT 25-001-002 **Mississippi State University** **2543**
Training of predoctoral graduate students in space-related sciences & technology

Period	Obligations	
03/14/64-08/01/72	FY73:	TOTAL: \$228,550
Prin. Invest.	NASA Tech. Officer	CASE Category
McKee, J. C., Jr.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGR 25-002-018 **University of Mississippi - Medical Center** **2544**
Study of airway resistance

Period	Obligations	
06/22/71-06/01/73	FY73:	TOTAL: \$29,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Milhorn, H. T., Jr.	JSC/Rummel, J. A.	53-Other Medical
	JSC/Waligora, J.	
(72-910 914-50-00)	(72-970 970-53-30)	

NAS 8-5414 **University of Southern Mississippi** **2545**
An assessment of the economic impact of the Mississippi test facility on south Mississippi and Louisiana

Period	Obligations	
05/01/65-06/01/76	FY73:	TOTAL: \$8,272
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	72-Economics
(62-250 141-00-00)		

NGL 25-005-007 **University of Southern Mississippi** **2546**
Remote sensing study of land use & sedimentation in Rose Barnett Reservoir, Jackson, Mississippi area

Period	Obligations	
02/15/72-02/28/76	FY73: \$50,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Pinson, J. W.	HQ-PY/Vitale, J. A.	39-Env Sci, NEC
	MTF/Mooneyhan, D. W.	
(10-371 340-00-00)		

NASA'S UNIVERSITY PROGRAM

MISSISSIPPI (Continued)

NGR 25-005-005 **University of Southern Mississippi** **2547**
 Novel diacids & dianhydrides as polymer precursors
Period *Obligations*
 06/09/71-06/30/74 FY73: \$41,000 TOTAL: \$97,050
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Thames, S. F. LARC/Johnston, N. J. 12-Chemistry
 LARC/Bell, V. L.
 (23-704 501-21-22) (23-740 134-03-22) (23-742 124-08-10)

MISSOURI

NGL 26-006-016 **Saint Louis University** **2548**
 Structure and circulation of the lower Martian troposphere
Period *Obligations*
 02/27/67-01/01/73 FY73: TOTAL: \$116,720
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Pallmann, A. J. LARC/Telefson, H. B. 31-Atmos Sci
 (23-705 130-00-00)

NGL 26-006-021 **Saint Louis University** **2549**
 Computer method for redesigning and nonlinear analysis of a redundant complex structure
Period *Obligations*
 02/04/69-02/01/73 FY73: TOTAL: \$108,005
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Rhodes, J. L. LARC/Fulton, R. E. 41-Aero Engr
 (23-760 126-00-00)

NGR 26-006-039 **Saint Louis University** **2550**
 Evaluation of cutaneous sensitivity
Period *Obligations*
 08/23/71-11/01/73 FY73: \$10,691 TOTAL: \$20,291
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Von Beaumont, W. ARC/Williams, B. A. 51-Biology
 ARC/Greenleaf, J. E.
 (21-970 970-21-14)

NGT 26-006-001 **Saint Louis University** **2551**
 Training of predoctoral graduate students in space-related science & technology
Period *Obligations*
 05/21/63-08/01/72 FY73: TOTAL: \$693,036
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Eigel, E. G., Jr. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NAS 9-9209 **University of Missouri - Columbia** **2552**
 Blood analyses for Apollo hematology procedures
Period *Obligations*
 04/28/69-06/30/74 FY73: \$50,788 TOTAL: \$110,788
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Mengel, C. E. JSC/Kimzey, S. L. 59-Life Sci, NEC
 JSC/Alexander, W. A.
 (72-960 948-60-91) (72-910 914-50-00)

NAS 9-10955 **University of Missouri - Columbia** **2553**
 Apollo diet evaluation
Period *Obligations*
 06/12/70-07/01/71 FY73: TOTAL: \$24,940
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Luckey, T. D. JSC/Rambaut, P. C. 59-Life Sci, NEC
 (72-910 914-50-00)

NAS 9-12369 **University of Missouri - Columbia** **2554**
 Energy and nutrient intake monitoring
Period *Obligations*
 01/19/72-09/30/74 FY73: \$49,983 TOTAL: \$74,966
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Rambaut, P. C. JSC/Rambaut, P. C. 59-Life Sci, NEC
 (72-970 970-51-14)

NAS 9-12526 **University of Missouri - Columbia** **2555**
 Development of a mathematical model
Period *Obligations*
 03/07/72-01/31/74 FY73: \$15,000 TOTAL: \$28,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Winnick, J. JSC/Ellis, W. E. 43-Chem Engr
 (72-970 970-52-21) (72-910 914-52-00)

NAS 9-13436 **University of Missouri - Columbia** **2556**
 Development and verification of a map model using system-10 computer-aided design program
Period *Obligations*
 06/11/73-08/31/74 FY73: \$29,073 TOTAL: \$29,073
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Tranter, W. H. JSC/Dawson, C. T. 21-Mathematics
 (72-980 909-41-07)

NGL 26-004-021 **University of Missouri - Columbia** **2557**
 Effects of radiation on gastro-intestinal function and cyclic turnover of intestinal epithelium
Period *Obligations*
 07/13/65-06/01/73 FY73: \$19,000 TOTAL: \$285,764
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Musacchia, X. J. WS/Holton, E. M. 51-Biology
 WS/Jackson, E. B.
 (53-970 970-71-61) (10-870 189-00-00) (53-870 189-54-62)

NGR 26-004-025 **University of Missouri - Columbia** **2558**
 Investigation of mammalian adaption to deep hypothermia and hypothermia-hibernation relationships
Period *Obligations*
 04/05/66-03/01/72 FY73: TOTAL: \$209,197
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 South, F. E. WS/ 51-Biology
 (10-870 189-00-00) (10-870 189-54-62) (53-870 189-54-62)

NGR 26-004-084 **University of Missouri - Columbia** **2559**
 Telemeter linked medical care network
Period *Obligations*
 11/18/70-11/01/71 FY73: TOTAL: \$62,377
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Schiffman, R. H. HQ-MM/Saunders, J. F. 59-Life Sci, NEC
 (10-870 189-54-63)

NGR 26-004-095 **University of Missouri - Columbia** **2560**
 Investigation of liquid cooled garment control
Period *Obligations*
 03/08/72-02/28/74 FY73: TOTAL: \$11,795
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Miles, J. B. ARC/Chambers, A. B. 49-Engr, NEC
 ARC/Blackaby, J. R.
 (21-970 970-22-30)

NASA'S UNIVERSITY PROGRAM **MISSOURI (Continued)**

NGR 26-004-098 University of Missouri - Columbia 2561
 Advanced CO2 management process analysis

Period	Obligations	
06/28/72-08/31/73	FY73: TOTAL: \$30,630	
Prin. Invest.	NASA Tech. Officer	CASE Category
Winnick, J.	JSC/Eandi, B. K.	46-Mech Engr
(72-910 914-50-00)		

NGR 26-004-099 University of Missouri - Columbia 2562
 Composite polymer films for long term biological sensors

Period	Obligations	
06/22/72-07/14/73	FY73: \$6,027 TOTAL: \$49,874	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hahn, A. W.	ARC/Sandler, H.	52-Clinical Med
(21-970 970-23-00)		

NGR 26-004-100 University of Missouri - Columbia 2563
 Hydrolysis of peptide bond in geological samples

Period	Obligations	
06/14/72-06/01/73	FY73: TOTAL: \$15,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gehrke, C. W.	ARC/Kenvolden, K. A.	
	ARC/Pollock, G. E.	59-Life Sci, NEC
(21-910 914-40-00)		

NAS 2-7078 University of Missouri - Kansas City 2564
 Study air pollutant detectors

Period	Obligations	
06/27/72-08/01/73	FY73: TOTAL: \$29,428	
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-SS/Starr, W. L.	39-Env Sci, NEC
(21-250 141-93-00)		

NGR 26-001-012 University of Missouri - Kansas City 2565
 Development and construction of a new spectrophotometer

Period	Obligations	
06/24/70-06/01/72	FY73: TOTAL: \$50,291	
Prin. Invest.	NASA Tech. Officer	CASE Category
Querry, M. R.	HQ-ER/Lehmann, J.	13-Physics
	GSFC/Drummond, R.	
(10-680 160-20-58)	(10-680 160-00-00)	

NGR 26-001-016 University of Missouri - Kansas City 2566
 Detection of early disease states

Period	Obligations	
08/16/72-09/01/73	FY73: \$39,200 TOTAL: \$39,200	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bryant, P. J.	JSC/Rummel, J. A.	53-Other Medical
(72-250 141-93-02)		

NAS 5-20282 University of Missouri - Rolla 2567
 Digital simulation of hybrid loop operation in rfi

Period	Obligations	
10/12/71-10/12/72	FY73: TOTAL: \$12,722	
Prin. Invest.	NASA Tech. Officer	CASE Category
Ziemer, R. E.	GSFC/Deerkoski, L. F.	45-Elec Engr
	GSFC/Golden, T. S.	
(51-500 150-22-11)		

NAS 8-28230 University of Missouri - Rolla 2568
 Development of an optimal control scheme for automatic braking of a landing aircraft

Period	Obligations	
01/14/72-08/01/72	FY73: TOTAL: \$10,003	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pazdera, J. S.	MSFC/Campbell, R. A.	41-Aero Engr
	MSFC/Golley, P. T.	
(62-980 908-52-18)	(62-910 933-50-00)	

NGR 26-003-026 University of Missouri - Rolla 2569
 A study of the fluctuating pressure field in regions of indirect flow separation of supersonic speeds

Period	Obligations	
04/26/67-09/01/72	FY73: TOTAL: \$105,659	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rechtien, R. D.	ARC/Coe, C. F.	49-Engr, NEC
(21-742 124-00-00)		

NGR 26-003-057 University of Missouri - Rolla 2570
 Lunar sample analysis

Period	Obligations	
09/01/71-01/31/73	FY73: TOTAL: \$29,760	
Prin. Invest.	NASA Tech. Officer	CASE Category
Manuel, O. K.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 26-003-069 University of Missouri - Rolla 2571
 Nutation control during precession of a spinstabilized spacecraft

Period	Obligations	
07/01/73-06/30/74	FY73: \$16,000 TOTAL: \$16,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Taylor, J. M.	GSFC/Flatley, T. W.	49-Engr, NEC
(51-680 160-20-51)		

NGR 26-004-097 University of Missouri - Rolla 2572
 Research in bioenvironmental systems

Period	Obligations	
04/17/72-08/31/75	FY73: TOTAL: \$57,750	
Prin. Invest.	NASA Tech. Officer	CASE Category
Miles, J. B.	ARC/Chambers, A. B.	46-Mech Engr
	ARC/Quattrone, P. D.	
(21-970 970-22-20)		

NAS 2-4151 Washington University 2573
 Study of lifting rotor vibrations

Period	Obligations	
01/20/67-06/30/73	FY73: \$5,357 TOTAL: \$287,903	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hohennemser, K. H.	ARC/Ormiston, R. A.	41-Aero Engr
	ARC/Peters, D. A.	
(21-760 126-9X-00)	(21-760 136-9X-00)	

NAS 8-26084 Washington University 2574
 Wave propagation in thermoviscous media

Period	Obligations	
06/10/70-09/30/73	FY73: TOTAL: \$39,971	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rodin, E. Y.	MSFC/Jones, J. H.	13-Physics
	MSFC/Wilhold, G. A.	
(62-920 982-52-00)	(62-920 976-30-00) (62-742 124-00-00)	

NASA'S UNIVERSITY PROGRAM **MISSOURI (Continued)**

NAS 8-26843 **Washington University** **2575**
HEAO definition experiment for large area cosmic ray detection
for extremely heavy nuclei

Period	FY73:	Obligations	TOTAL:
02/01/71-04/01/72			\$156,035
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Israel, M. H.	MSFC/Dabbs, J. R.	11-Astronomy	
	MSFC/Jones, J.		
(62-850 188-78-53)	(62-850 832-12-00)		

NAS 8-27976 **Washington University** **2576**
Design, development and operation of a heavy nuclei experiment
under the HEAO program

Period	FY73:	Obligations	TOTAL:
06/16/72-02/15/78	\$80,000		\$137,004
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Israel, M. H.	MSFC/Krome, H. O.	11-Astronomy	
	MSFC/Cochran, J.		
(62-850 832-12-00)			

NAS 9-11895 **Washington University** **2577**
Lunar surface cosmic ray experiment (Walker)

Period	FY73:	Obligations	TOTAL:
06/28/71-04/01/73	\$15,668		\$65,668
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Walker, R. M.	JSC/Eichelman, W. F.	31-Atmos Sci	
(72-910 914-40-00)			

NGL 26-008-054 **Washington University** **2578**
Application of satellite communications to educational develop-
ment

Period	FY73:	Obligations	TOTAL:
10/13/69-12/01/73	\$150,000		\$600,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Morgan, R. P.	HQ-EC/Silverman, D.	99-Multi-Discip	
	HQ-PY/Redding, E. R.		
(10-371 340-00-00)	(10-620 164-06-50)	(10-370 183-00-00)	

NGL 26-008-057 **Washington University** **2579**
Development of solar wind shock models with tensor plasma
pressure for data analysis

Period	FY73:	Obligations	TOTAL:
12/29/69-05/01/72			\$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Abraham Shraune, B.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics	
	HQ-SG/Schmerling, E. R.		
(10-850 188-00-00)	(10-850 188-36-55)		

NGL 26-008-065 **Washington University** **2580**
Lunar sample analysis

Period	FY73:	Obligations	TOTAL:
02/01/71-01/31/76	\$241,100		\$873,530
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Walker, R. M.	JSC/Harris, J. W.	13-Physics	
(72-910 914-40-00)			

NGR 26-008-001 **Washington University** **2581**
Determination of characteristics of high altitude primary cosmic
radiation at low latitudes

Period	FY73:	Obligations	TOTAL:
09/01/61-01/31/74	\$94,999		\$948,280
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Klarmann, J.	HQ-SG/Opp, A. G.	11-Astronomy	
Israel, M. H.	HQ-SG/Kavanagh, L. D., Jr.		
Israel, M. H.			
(10-850 188-46-51)	(10-850 188-00-00)		

NGR 26-008-069 **Washington University** **2582**
Astronomy at sub-millimeter wavelengths

Period	FY73:	Obligations	TOTAL:
04/26/71-08/31/73			\$119,666
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Friedlander, M. W.	HQ-SG/Boggess, N. W.	11-Astronomy	
	HQ-SG/Roman, N. G.		
(10-850 188-41-55)			

NGT 26-008-005 **Washington University** **2583**
Training of graduate students in space-related science and
technology

Period	FY73:	Obligations	TOTAL:
04/05/63-08/01/72			\$943,292
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Morrow, R. E.	HQ-PY/Carter, C. H.	99-Multi-Discip	
(10-370 181-00-00)			

NSR 26-008-036 **Washington University** **2584**
Evaluation of the effect of prolonged states of weightlessness on
gastric motility

Period	FY73:	Obligations	TOTAL:
06/30/70-10/31/71			\$120,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ballinger, W. F.	JSC/Rambaut, P. C.	53-Other Medical	
(72-980 975-60-00)			

MONTANA

NAS 8-28202 **Montana State University** **2585**
London moment measurement in a superconducting gyroscope

Period	FY73:	Obligations	TOTAL:
01/13/72-01/01/73			\$18,038
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hendricks, J. B.	MSFC/Decher, R.	13-Physics	
	MSFC/Urban, E. W.		
(62-850 188-41-54)			

NGR 27-001-040 **Montana State University** **2586**
Establishment of a mission-oriented gravitation research center

Period	FY73:	Obligations	TOTAL:
06/28/71-09/01/73			\$64,350
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Nordvedt, K., Jr.	HQ-SG/Roman, N. G.	11-Astronomy	
	HQ-SG/Ashworth, C. D.		
(10-850 188-41-54)			

NASA'S UNIVERSITY PROGRAM MONTANA (Continued)

NAS 5-21826	University of Montana	2587
Investigation of applicability of ERTS-A to Montana geology		
<i>Period</i>	<i>Obligations</i>	
08/11/72-12/01/73	FY73: \$88,889	TOTAL: \$88,889
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weidman, R. M.	GSFC/Crump, E. W.	32-Geological Sci
(51-680 641-14-03)		

NGR 27-002-006	University of Montana	2588
Satellite-related biotelemetry equipment development		
<i>Period</i>	<i>Obligations</i>	
08/21/70-07/31/73	FY73: \$15,000	TOTAL: \$42,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Craighead, J. J.	HQ-ER/Jacobs, G. J.	51-Biology
	HQ-ER/Park, A. B.	
Varney, J. R.		
(10-680 160-75-01)		

NEBRASKA

NAS 5-21756	University of Nebraska - Lincoln	2589
Evaluation of ERTS-A imagery in mapping and managing soil and range resources in the sand hills region of Nebraska		
<i>Period</i>	<i>Obligations</i>	
05/25/72-07/31/74	FY73: \$48,200	TOTAL: \$51,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Drew, J. V.	GSFC/Stonesifer, G. R.	39-Env Sci, NEC
Burzlauff, D. F.		
(51-680 641-14-01)	(51-680 641-14-00)	

NAS 5-23054	University of Nebraska - Lincoln	2590
Investigation of photoelectron spectroscopy		
<i>Period</i>	<i>Obligations</i>	
11/30/71-11/30/72	FY73:	TOTAL: \$41,176
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Samson, J. A.	GSFC/Aikin, A. C.	13-Physics
(51-840 185-00-00)		

NAS 5-23125	University of Nebraska - Lincoln	2591
Calibration of magnetic electron multipliers		
<i>Period</i>	<i>Obligations</i>	
06/23/72-01/22/74	FY73: \$20,766	TOTAL: \$50,804
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Samson, J. A.	GSFC/Kalet, M. W.	11-Astronomy
(51-850 188-38-53)		

NAS 9-11045	University of Nebraska - Lincoln	2592
Health protection and food preservation by gamma irradiation of food		
<i>Period</i>	<i>Obligations</i>	
06/29/70-08/01/72	FY73: \$25,000	TOTAL: \$69,977
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hartung, T. E.	JSC/Heidelbaugh, N. D.	
	JSC/Rambaut, P. C.	59-Life Sci, NEC
(72-970 970-52-24)		

NASW 2213	University of Nebraska - Lincoln	2593
Exploring the heavens and the earth from space		
<i>Period</i>	<i>Obligations</i>	
06/17/71-12/01/72	FY73:	TOTAL: \$14,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kopp, O. W.	HQ-FE/Thorne, M.	99-Multi-Discip
(10-030 023-00-00)		

NGL 28-004-020	University of Nebraska - Lincoln	2594
Applications of remote sensing in resource management in Nebraska		
<i>Period</i>	<i>Obligations</i>	
04/20/72-05/31/76	FY73: \$50,000	TOTAL: \$150,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Drew, J. V.	HQ-PY/Vitale, J. A.	39-Env Sci, NEC
(10-371 340-00-00)		

NGR 28-004-021	University of Nebraska - Lincoln	2595
Interaction of radiation with planetary gases		
<i>Period</i>	<i>Obligations</i>	
02/23/73-01/31/74	FY73: \$41,544	TOTAL: \$41,544
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Samson, J. A.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-84)		

NEVADA

NGR 29-001-039	University of Nevada - Las Vegas	2596
In situ measurements on microbial respiration and metabolism in soils and salt flats		
<i>Period</i>	<i>Obligations</i>	
07/03/70-06/01/72	FY73: \$7,500	TOTAL: \$23,728
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tew, R. W.	HQ-SL/Young, R. S.	51-Biology
(10-840 192-55-63)		

NAS 5-21870	University of Nevada - Reno	2597
Study of the use of ERTS-A imagery for wildland resource evaluation		
<i>Period</i>	<i>Obligations</i>	
10/03/72-01/01/74	FY73: \$40,651	TOTAL: \$40,651
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tueller, P. A.	GSFC/Crump, E. W.	39-Env Sci, NEC
(51-680 641-14-01)		

NAS 9-7779		University of Nevada - Reno	2598
Geologic ground truth studies			
Period		Obligations	
02/16/68-01/01/72	FY73:	TOTAL:	\$225,329
Prin. Invest.	NASA Tech. Officer	CASE Category	
Quade, J.	JSC/Amsbury, D. L.	39-Env Sci, NEC	
(72-680 160-00-00)	(72-680 640-00-00)		

NAS 9-13274	University of Nevada - Reno	2599
The great basin investigation		
<i>Period</i>	<i>Obligations</i>	
02/05/73-06/30/74	FY73: \$96,000	TOTAL: \$96,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Quade, J.	JSC/Miller, M.	32-Geological Sci
(72-960 948-63-83)		

NASA'S UNIVERSITY PROGRAM **NEVADA (Continued)**

NGT 29-001-002 **University of Nevada - Reno** **2600**
Training of graduate students in space-related science and technology
Period *Obligations*
04/04/63-08/01/72 FY73: TOTAL: \$233,116
Prin. Invest. *NASA Tech. Officer* *CASE Category*
O'Brien, T. D. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NEW HAMPSHIRE

NAS 5-9305 **Dartmouth College** **2601**
Whistler-mode waves experiment for the orbiting geophysical observatory, mission F /OGO-F/
Period *Obligations*
03/23/66-09/30/72 FY73: TOTAL: \$1,134,200
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Laaspere, T. GSFC/Meese, K. J. 13-Physics
(51-850 841-00-00) (51-850 841-12-00) (51-850 385-50-00)

NAS 5-21749 **Dartmouth College** **2602**
ERTS-A data user investigation of land use of northern megalopolis
Period *Obligations*
05/02/72-06/01/73 FY73: \$60,201 TOTAL: \$63,201
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Simpson, R. B. GSFC/Szajna, E. F. 39-Env Sci, NEC
(51-680 641-14-02) (51-680 641-14-00)

NAS 9-13311 **Dartmouth College** **2603**
Investigation of thermal anomalies in central American volcanic chain and evaluation of utility of thermal anomaly monitoring in predicting volcanic eruptions
Period *Obligations*
03/06/73-06/30/74 FY73: \$10,600 TOTAL: \$10,600
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Stoiber, R. E. JSC/Miller, M. L. 32-Geological Sci
(72-960 948-63-83)

NGR 30-001-001 **Dartmouth College** **2604**
Effects of plant growth hormones on plant development in absence of gravity
Period *Obligations*
09/03/72-09/01/73 FY73: TOTAL: \$138,408
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lyon, C. J. ARC/Winter, D. L. 51-Biology
(10-870 189-00-00) (21-870 189-54-61) (10-870 189-54-61)

NGR 30-001-030 **Dartmouth College** **2605**
OGO-IV data reduction
Period *Obligations*
05/29/70-08/31/72 FY73: TOTAL: \$64,367
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Morgan, M. G. HQ-SG/Schmerling, E. R. 31-Atmos Sci
HQ-SG/Kavanagh, L. D. (10-850 385-00-00) (10-850 385-36-00)

NGR 30-001-040 **Dartmouth College** **2606**
Magnetopause structure from satellite observations
Period *Obligations*
04/28/72-06/30/73 FY73: TOTAL: \$26,268
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Sonnerup, B. U. HQ-SG/Hallenbeck, D. R. 13-Physics
HQ-SG/Schmerling, E. R. (10-850 385-36-00)

NGR 30-001-041 **Dartmouth College** **2607**
Processing and analysis of data from VLF-LF experiments on the OGO-4 and OGO-6 spacecraft and continuation of studies at ground stations
Period *Obligations*
10/02/72-06/01/73 FY73: \$100,000 TOTAL: \$100,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Laaspere, T. HQ-SG/Schmerling, E. R. 31-Atmos Sci
Morgan, M. G. HQ-SG/Hallenbeck, D. R. (10-850 385-36-00)

NGT 30-001-003 **Dartmouth College** **2608**
Training of predoctoral graduated students in space-related sciences & technology
Period *Obligations*
03/18/64-08/01/72 FY73: TOTAL: \$402,601
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hornig, J. F. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 5-11054 **University of New Hampshire** **2609**
Study & design effort for rotating wheel experiment OSO-H
Period *Obligations*
06/30/67-09/30/73 FY73: \$158,000 TOTAL: \$2,630,704
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Chupp, E. L. GSFC/Donley, J. L. 13-Physics
Higbie, P. GSFC/Thole, J. M. (51-850 821-22-00)

NAS 5-11276 **University of New Hampshire** **2610**
Design, testing, and calibration of QSF Pioneer F and G cosmic ray unit
Period *Obligations*
02/11/70-06/30/73 FY73: \$30,000 TOTAL: \$84,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Webber, W. R. GSFC/Trainor, J. H. 11-Astronomy
(51-840 811-22-00)

NAS 5-11694 **University of New Hampshire** **2611**
Low energy electron-proton experiment for ATS-F
Period *Obligations*
05/01/69-04/01/74 FY73: \$88,000 TOTAL: \$456,100
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Arnoldy, R. L. GSFC/Wainscott, F. H. 11-Astronomy
(51-620 630-22-00)

NAS 5-23263 **University of New Hampshire** **2612**
Design & fabrication of flight electronics, balloon gondola with pointing system, and ground stations
Period *Obligations*
06/25/73-01/30/74 FY73: \$42,131 TOTAL: \$42,131
Prin. Invest. *NASA Tech. Officer* *CASE Category*
GSFC/ (51-850 188-38-53) (51-850 385-38-00) 45-Elec Engr

NASA'S UNIVERSITY PROGRAM NEW HAMPSHIRE (Continued)

NGL 30-002-018 **University of New Hampshire** **2613**
Investigation of energy levels in foil excited atomic beams

<i>Period</i>	<i>Obligations</i>
03/15/65-01/01/75	FY73: \$6,000 TOTAL: \$147,355
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Chupp, E. L.	HQ-SG/Weldon, J. M. 11-Astronomy
	HQ-SG/Oertel, G. K.
(10-850 188-38-52)	

NGL 30-002-021 **University of New Hampshire** **2614**
Investigation and development of techniques for solar neutron and gamma ray detection

<i>Period</i>	<i>Obligations</i>
02/28/66-01/01/74	FY73: \$85,000 TOTAL: \$760,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Chupp, E. L.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Roman, N. G.
(10-850 188-46-54)	

NGR 30-002-052 **University of New Hampshire** **2615**
Research program in area of cosmic ray and X-ray astronomy

<i>Period</i>	<i>Obligations</i>
02/12/70-09/30/73	FY73: \$130,000 TOTAL: \$430,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Webber, W. R.	HQ-SG/Opp, A. G. 11-Astronomy
	HQ-SG/Kavanagh, L. D., Jr.
(10-850 188-46-51)	(10-850 385-46-00)

NGR 30-002-054 **University of New Hampshire** **2616**
Auroral particle measurements

<i>Period</i>	<i>Obligations</i>
09/12/69-12/31/73	FY73: \$37,067 TOTAL: \$161,811
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Arnoldy, R. J.	HQ-SG/Kavanagh, L. D., Jr. 13-Physics
	HQ-SG/Ott, E. J.
(10-850 879-11-00)	(10-850 879-00-00)

NGR 30-002-074 **University of New Hampshire** **2617**
Measurement of neutron and gamma-ray intensity in space

<i>Period</i>	<i>Obligations</i>
11/12/70-12/31/72	FY73: TOTAL: \$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Lockwood, J. A.	HQ SG/Kavanagh, L. D., Jr. 13-Physics
(10-850 879-11-00)	

NGR 30-002-087 **University of New Hampshire** **2618**
Analysis of cosmic ray data from Pioneer space probe

<i>Period</i>	<i>Obligations</i>
03/10/72-09/01/72	FY73: TOTAL: \$40,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Webber, W. R.	HQ-SG/ 11-Astronomy
(10-850 385-46-00)	

NGR 30-002-088 **University of New Hampshire** **2619**
Measurement of cosmic ray neutron leakage from the atmosphere by OGO-6, & data analysis

<i>Period</i>	<i>Obligations</i>
02/00/32-12/31/72	FY73: TOTAL: \$18,929
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Lockwood, J. A.	HQ-SG/Schmerling, E. R. 31-Atmos Sci
	HQ-SG/Hallenbeck, D. R.
(10-850 385-36-00)	

NEW JERSEY

NGL 31-006-010 **Fairleigh Dickinson University** **2620**
Lunar and planetary spectral reflectivity

<i>Period</i>	<i>Obligations</i>
08/08/72-02/29/76	FY73: \$106,400 TOTAL: \$106,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Adams, J. B.	HQ-SM/Bryson, R. P. 32-Gelological Sci
	HQ-SM/Allenby, R. J.
(10-810 383-09-53)	(10-810 383-09-57)

NGL 31-006-011 **Fairleigh Dickinson University** **2621**
Lunar sample analysis

<i>Period</i>	<i>Obligations</i>
09/19/72-01/31/76	FY73: \$201,090 TOTAL: \$201,090
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Adams, J. B.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NAS 1-9705 **Princeton University** **2622**
Participation in the science planning for the Viking 1975 missions in the area of magnetic properties

<i>Period</i>	<i>Obligations</i>
04/03/70-03/31/77	FY73: \$16,693 TOTAL: \$86,235
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Hargraves, R. B.	LARC/Soffen, G. A. 13-Physics
(23-840 815-20-00)	

NAS 1-10075 **Princeton University** **2623**
Design and installation of a research oriented landing control system to improve the ease and quality of landing

<i>Period</i>	<i>Obligations</i>
06/08/70-12/01/72	FY73: TOTAL: \$372,568
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Seckel, E.	LARC/Crane, H. L. 41-Aero Engr
(23-760 736-00-00)	(23-760 721-58-10) (23-760 721-07-10)

NAS 1-11231 **Princeton University** **2624**
Flight test program to improve the ease and quality of landing

<i>Period</i>	<i>Obligations</i>
11/24/71-01/14/74	FY73: \$39,555 TOTAL: \$136,365
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Seckel, E.	LARC/Crane, H. L. 41-Aero Engr
	LARC/Stickle, J. W.
(23-702 760-60-01)	

NAS 1-11543 **Princeton University** **2625**
Flight test investigation for in-flight simulation of four-engine powered-lift STOL airplanes during approach and landing

<i>Period</i>	<i>Obligations</i>
04/24/72-02/08/73	FY73: TOTAL: \$91,381
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i> <i>CASE Category</i>
Seckel, E.	LARC/Hassell, J. L., Jr. 41-Aero Engr
	LARC/Judd, J. H.
(23-702 741-72-03)	

NASA'S UNIVERSITY PROGRAM **NEW JERSEY (Continued)**

NAS 2-6705 **Princeton University** **2626**
Study of aircraft fire safety/ flame spreading across materials

Period	Obligations	
11/15/71-10/31/72	FY73:	TOTAL: \$23,980
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sirignano, W. A.	ARC/Kourtidis, D. A.	13-Physics
Glassman, I.	ARC/Parker, J. A.	
(21-740 134-03-22)		

NAS 2-7187 **Princeton University** **2627**
Study mecor for V/STOL design

Period	Obligations	
10/05/72-07/16/73	FY73: \$51,847	TOTAL: \$51,847
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Durbin, E. J.	ARC/Gossett, T. D.	41-Aero Engr
Born, G. J.	ARC/Corliss, L. D.	
(21-760 136-9X-00)	(21-704 501-9X-00)	

NAS 2-7350 **Princeton University** **2628**
STOL approach & landing research

Period	Obligations	
03/02/73-02/28/74	FY73: \$100,000	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Seckel, E.	ARC/Franklin, J. A.	41-Aero Engr
(21-702 766-71-02)		

NAS 2-7615 **Princeton University** **2629**
Effects of distributed blade properties on stability of hingeless blades

Period	Obligations	
05/30/73-06/30/74	FY73: \$40,345	TOTAL: \$40,345
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dowell, E. H.	ARC/Ormiston, R. A.	41-Aero Engr
Curtiss, H. C.	ARC/Morse, H. A.	
(21-704 501-9X-00)		

NAS 5-1810 **Princeton University** **2630**
Design, development, fabrication, & testing of orbiting astronomical observatory experiment

Period	Obligations	
06/08/72-12/01/78	FY73: \$699,600	TOTAL: \$16,259,598
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Spitzer, L., Jr.	GSFC/Kupperian, J. E.	11-Astronomy
(51-850 831-42-00)		

NAS 5-23254 **Princeton University** **2631**
Vidicon tube study

Period	Obligations	
05/18/73-07/18/73	FY73: \$28,000	TOTAL: \$28,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	GSFC/	45-Elec Engr
(51-850 188-78-58)		

NAS 8-11101 **Princeton University** **2632**
Study of mass and mixture ratio surveys of F1 injector electrons

Period	Obligations	
11/01/66-11/01/77	FY73:	TOTAL: \$2,811
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	MSFC/	12-Chemistry
(62-910 940-50-00)		

NAS 8-23071 **Princeton University** **2633**
Far ultraviolet stellar spectrometry

Period	Obligations	
04/01/69-09/01/71	FY73:	TOTAL: \$91,949
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Morton, D. C.	MSFC/Reichmann, E.	11-Astronomy
	MSFC/Zwiener, J.	
(62-980 945-84-00)	(62-850 188-00-00)	(62-980 975-84-00)

NAS 8-27687 **Princeton University** **2634**
Development, construction, testing, & delivery of an integrating television camera

Period	Obligations	
06/18/71-07/01/72	FY73:	TOTAL: \$96,981
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Danielson, R. E.	MSFC/Bordelon, C. S.	11-Astronomy
	MSFC/Spangler, D. E.	
(62-850 188-41-60)		

NAS 8-28577 **Princeton University** **2635**
Nonlinear panel flutter a comparison between experiment & theory

Period	Obligations	
04/04/72-04/03/73	FY73:	TOTAL: \$39,933
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Dowell, E. H.	MSFC/Clever, W. W., III	41-Aero Engr
	MSFC/Beranik, R. G.	
(62-920 982-52-00)	(62-920 976-30-00)	

NAS 8-29239 **Princeton University** **2636**
Evaluation of Stratoscope III television system

Period	Obligations	
09/06/72-09/01/74	FY73: \$3,500	TOTAL: \$3,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Danielson, R. E.	MSFC/Bordelon, C. S.	45-Elec Engr
	MSFC/Spangler, D. E.	
(62-850 188-41-60)		

NGL 31-001-003 **Princeton University** **2637**
X-ray diffraction studies of extraterrestrial type materials

Period	Obligations	
09/30/69-08/01/72	FY73:	TOTAL: \$186,802
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Delfeyes	HQ-SM/Bryson, R. P.	39-Env Sci, NEC
	HQ-SM/Allenby, R. J.	
(10-840 185-00-00)	(10-810 195-00-00)	(10-810 383-00-00)

NGL 31-001-005 **Princeton University** **2638**
Formation & stability of magnetogasdynamic front in a pitch discharge

Period	Obligations	
09/24/62-09/30/75	FY73: \$160,000	TOTAL: \$1,782,912
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Jahn, R. G.	HQ-RP/Mullin, J. P.	42-Astro Engr
	HQ-RP/Lazar, J.	
(10-704 502-04-14)		

NASA'S UNIVERSITY PROGRAM
NEW JERSEY (Continued)

NGL 31-001-007 **Princeton University** **2639**
Theoretical & experimental studies of ultraviolet phenomena of astronomical interest & galactic gas dynamics

Period	Obligations
05/06/63-03/31/76	FY73: \$100,000 TOTAL: \$1,477,000
Prin. Invest.	NASA Tech. Officer CASE Category
Spitzer, L., Jr.	HQ-SG/Bogges, N. W. 11-Astronomy
	HQ-SG/Roman, N. G.
(10-850 188-41-51)	(10-850 188-00-00)

NGL 31-001-109 **Princeton University** **2640**
Design of principles for predicting ignition performance of solid propellant rocket motors

Period	Obligations
03/05/68-09/01/74	FY73: TOTAL: \$250,478
Prin. Invest.	NASA Tech. Officer CASE Category
Summerfield, M.	JPL/Strand, L. 41-Aero Engr
	LARC/Sullivan, E. M.
(23-710 128-00-00)	(23-710 113-32-04) (23-710 128-32-90)

NGL 31-001-119 **Princeton University** **2641**
Theoretical problems connected with sonic boom

Period	Obligations
01/29/68-09/01/74	FY73: \$15,000 TOTAL: \$167,790
Prin. Invest.	NASA Tech. Officer CASE Category
Hayes, W. D.	LARC/Hilton, D. A. 41-Aero Engr
	LARC/Henderson, H. H.
(23-704 501-06-11)	(10-740 129-00-00) (23-760 136-13-02)

NGL 31-001-129 **Princeton University** **2642**
Combustion of metals

Period	Obligations
04/24/68-09/01/73	FY73: TOTAL: \$174,000
Prin. Invest.	NASA Tech. Officer CASE Category
Glassman, I.	LERC/ 12-Chemistry
(22-710 113-31-08)	(22-710 128-31-90)

NGL 31-001-146 **Princeton University** **2643**
Boundary layer noise and panel flutter

Period	Obligations
11/01/68-10/01/74	FY73: \$39,500 TOTAL: \$285,460
Prin. Invest.	NASA Tech. Officer CASE Category
Dowell, E. H.	LARC/Bohon, H. L. 42-Astro Engr
(23-704 502-32-02)	(23-742 124-08-31) (23-742 124-00-00)

NGL 31-001-155 **Princeton University** **2644**
Nonlinear aspects of combustion instability in liquid propellant rocket motors

Period	Obligations
02/11/69-10/31/73	FY73: TOTAL: \$696,000
Prin. Invest.	NASA Tech. Officer CASE Category
Harrye, D. T.	LERC/Priem, R. J. 41-Aero Engr
(22-710 128-00-00)	

NGL 31-001-252 **Princeton University** **2645**
Air traffic control technology

Period	Obligations
11/17/71-10/01/74	FY73: \$50,000 TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer CASE Category
Graham, D.	LARC/Mace, W. D. 41-Aero Engr
Lion, P. M.	LARC/Mace, W. D.
(23-704 501-03-02)	(23-750 135-06-02) (10-750 135-06-02)

NGL 31-001-283 **Princeton University** **2646**
Lunar sample analysis

Period	Obligations
06/30/72-01/31/76	FY73: \$68,600 TOTAL: \$123,000
Prin. Invest.	NASA Tech. Officer CASE Category
Brown, G. E.	JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)	

NGR 31-001-001 **Princeton University** **2647**
Stratoscope II program

Period	Obligations
02/12/70-09/30/73	FY73: \$95,000 TOTAL: \$2,740,925
Prin. Invest.	NASA Tech. Officer CASE Category
Danielson, R. E.	HQ-SG/Roman, N. G. 11-Astronomy
	HQ-SG/Holtz, J. R.
(10-850 188-41-51)	

NGR 31-001-074 **Princeton University** **2648**
Investigations of turbulent boundary layers with suction, cross flows and wall

Period	Obligations
06/22/66-09/30/72	FY73: TOTAL: \$255,356
Prin. Invest.	NASA Tech. Officer CASE Category
Mellor, G. L.	LERC/Lieblein, S. 41-Aero Engr
Herring, H. J.	LERC/Saule, A. V.
McLean, J. D.	
(22-760 721-00-00)	(22-760 721-56-13) (22-762 764-72-02)

NGR 31-001-142 **Princeton University** **2649**
Application of digital computer and optical analog techniques to rectification and enhancement of astronomical images

Period	Obligations
12/18/68-12/31/73	FY73: TOTAL: \$195,700
Prin. Invest.	NASA Tech. Officer CASE Category
Danielson, R. E.	HQ-SG/Sures, A. H. 11-Astronomy
Lawrance, J. L.	HQ-SG/Aucremann, M. J.
(10-850 188-00-00)	(10-850 188-78-57)

NGR 31-001-151 **Princeton University** **2650**
Molecular beam studies of inelastic neutral particle cross sections

Period	Obligations
10/01/68-09/30/72	FY73: TOTAL: \$95,993
Prin. Invest.	NASA Tech. Officer CASE Category
Kelly, A.	HQ-NS/Harrison, H. H. 13-Physics
(10-720 112-02-20)	(45-720 112-02-20) (10-740 129-01-22)

NGR 31-001-152 **Princeton University** **2651**
Analytical methods of trajectory analysis

Period	Obligations
01/15/70-10/31/73	FY73: \$50,000 TOTAL: \$192,600
Prin. Invest.	NASA Tech. Officer CASE Category
Lion, P. M.	GSFC/Barbieri, R. W. 42-Astro Engr
(51-830 180-06-50)	

NGR 31-001-170 **Princeton University** **2652**
Computer system modeling and analysis

Period	Obligations
09/24/69-08/31/72	FY73: TOTAL: \$40,181
Prin. Invest.	NASA Tech. Officer CASE Category
Coffman, E. G.	GSFC/Greene, E. P. 19-Phys Sci, NEC
(51-750 125-00-00)	(25-750 125-00-00)

NASA'S UNIVERSITY PROGRAM
NEW JERSEY (Continued)

NGR 31-001-185 **Princeton University** **2653**
 Continued research on analysis of nuclear rocket engine systems
Period *Obligations*
 05/04/70-09/30/73 FY73: \$150,000 TOTAL: \$595,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Layton, J. P. HQ-NS/Gruber, M. 72-Economics
 HQ-NS/Schieb, W. S., Jr.
 (10-701 792-91-01) (45-701 792-91-01) (45-701 792-91-02)

NGR 31-001-197 **Princeton University** **2654**
 Three dimensional boundary layer effects on panel flutter
Period *Obligations*
 03/25/70-07/31/73 FY73: \$34,720 TOTAL: \$106,700
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Dowell, E. H. ARC/Gaspers, P. A., Jr. 41-Aero Engr
 (21-704 501-22-05)

NGR 31-001-200 **Princeton University** **2655**
 Development of a technique for characterizing thermomechanical properties of thermally stable polymers
Period *Obligations*
 04/27/70-03/31/73 FY73: TOTAL: \$25,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gillham, J. K. LARC/Pezdirtz, G. F. 43-Chem Engr
 (23-760 720-00-00) (23-740 134-03-22)

NGR 31-001-202 **Princeton University** **2656**
 Lunar retro-reflector ranging
Period *Obligations*
 05/27/70-06/14/73 FY73: TOTAL: \$15,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Dicke, R. H. HQ-SM/Strickland, A. T. 13-Physics
 (10-810 383-00-00)

NGR 31-001-205 **Princeton University** **2657**
 Lunar sample analysis
Period *Obligations*
 01/06/71-01/31/73 FY73: TOTAL: \$86,860
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Hollister, L. S. JSC/Harris, J. W. 12-Chemistry
 (72-910 914-40-00)

NGR 31-001-208 **Princeton University** **2658**
 Lunar sample analysis
Period *Obligations*
 01/12/71-02/01/72 FY73: TOTAL: \$17,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Hargraves, R. B. JSC/Harris, J. W. 13-Physics
 (72-910 914-40-00)

NGR 31-001-221 **Princeton University** **2659**
 Investigation of structure-property relations in systematic series of novel polymers
Period *Obligations*
 03/11/71-02/28/74 FY73: \$26,970 TOTAL: \$78,039
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gillham, J. K. LARC/Johnston, N. J.
 LARC/Bell, V. L. 19-Phys Sci, NEC
 (23-704 501-21-22) (23-740 134-03-22)

NGR 31-001-230 **Princeton University** **2660**
 High speed hydrogen/graphite interaction
Period *Obligations*
 04/16/71-06/01/73 FY73: TOTAL: \$160,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Kelly, A. J. HQ-NS/Schwenk, F. C. 42-Astro Engr
 Harrie, D. T. HQ-NS/Gersteine, N.
 (10-720 112-29-13) (45-720 122-00-00) (45-720 122-29-13)

NGR 31-001-236 **Princeton University** **2661**
 Large high resolution integrating TV sensor for astronomical applications
Period *Obligations*
 06/15/71-06/30/73 FY73: \$180,000 TOTAL: \$380,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Spitzer, L., Jr. HQ-SG/Sures, A. H. 11-Astronomy
 HQ-SG/Aucremann, M. J.
 (10-850 188-78-56)

NGR 31-001-241 **Princeton University** **2662**
 Internal noise sources of aircraft jet engines & possible means of noise reduction
Period *Obligations*
 04/11/72-01/31/73 FY73: \$20,580 TOTAL: \$51,157
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Summerfield, M. LARC/Maestrello, L. 41-Aero Engr
 LARC/Maglieri, D. J.
 (23-704 501-04-01)

NGR 31-001-242 **Princeton University** **2663**
 A new spectroscopic technique utilizing the Fabry-Perot interferometer
Period *Obligations*
 07/13/72-06/01/73 FY73: \$15,120 TOTAL: \$15,120
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Smith, W. H. HQ-SL/Brunk, W. E. 11-Astronomy
 HQ-SL/Fellows, R. F.
 (10-840 196-41-84)

NGR 31-001-263 **Princeton University** **2664**
 Quasi-steady plasma thruster system studies
Period *Obligations*
 11/30/71-11/30/72 FY73: TOTAL: \$79,995
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Kelly, A. J. LARC/Hoell, J. M., Jr. 13-Physics
 (23-710 113-26-14)

NGR 31-001-267 **Princeton University** **2665**
 Theoretical analysis of impact in composite plates
Period *Obligations*
 04/03/72-04/30/74 FY73: \$21,970 TOTAL: \$38,980
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Moon, F. C. LERC/Chamis, C. C. 41-Aero Engr
 LERC/Johns, R. H.
 (22-704 501-22-03)

NGR 31-001-272 **Princeton University** **2666**
 Structure property relations in low temperature adhesives
Period *Obligations*
 03/31/72-06/30/73 FY73: \$20,000 TOTAL: \$60,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gillham, J. K. LARC/McHatton, A. D. 43-Chem Engr
 (23-703 320-00-00)

NASA'S UNIVERSITY PROGRAM **NEW JERSEY (Continued)**

NGR 31-001-274 **Princeton University** **2667**
 Studies in elastic and electromagnetic wave scattering in the lunar crust
Period *Obligations*
 06/29/72-06/30/74 **FY73:** **TOTAL: \$80,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Phinney, R. A. HQ-SM/Bryson, R. P. 32-Geological Sci
 Jordan, T. H. HQ-MA/Allenby, R. J.
 (10-810 383-09-53)

NGR 31-001-276 **Princeton University** **2668**
 Design study of the television system for the large space telescope
Period *Obligations*
 06/29/72-06/30/73 **FY73:** **TOTAL: \$18,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Lowrance, J. L. MSFC/Hamilton, E. C. 11-Astronomy
 MSFC/Digesu, F. E.
 (62-980 975-84-78)

NGR 31-001-277 **Princeton University** **2669**
 VTOL mathematical model designs for optimal control systems designs
Period *Obligations*
 04/20/72-04/30/73 **FY73:** **TOTAL: \$49,330**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Durbin, E. J. ARC/Smith, G. A. 41-Aero Engr
 ARC/Meyer, G.
 (21-750 135-19-02)

NGR 31-001-307 **Princeton University** **2670**
 Fundamental and applied research on core engine combustion noise of aircraft engines
Period *Obligations*
 06/01/73-06/14/76 **FY73: \$39,444** **TOTAL: \$39,444**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Summerfield, M. LERC/Gray, V. H. 41-Aero Engr
 (22-704 501-15-83)

NGT 31-001-009 **Princeton University** **2671**
 Training of graduate students in space-related science and technology
Period *Obligations*
 04/09/63-08/01/72 **FY73:** **TOTAL: \$1,106,495**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Pittendrigh, C. S. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NSR 31-001-127 **Princeton University** **2672**
 Evaluation and development of television tubes for space astronomy
Period *Obligations*
 06/26/68-06/30/73 **FY73:** **TOTAL: \$464,958**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Spitzer, L. HQ-SG/Roman, N. G. 11-Astronomy
 HQ-SG/Aucremann, M. J.
 (10-850 188-00-00) (10-850 188-78-57)

NSR 31-001-259 **Princeton University** **2673**
 Development and evaluation of infrared sensitive image sensors for space astronomy
Period *Obligations*
 03/16/72-12/31/73 **FY73:** **TOTAL: \$89,423**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Morton, D. C. HQ-SG/Sures, A. H. 11-Astronomy
 Lowrance, J. L. HQ-SG/Aucremann, M. J.
 (10-850 188-78-57)

NSR 31-001-286 **Princeton University** **2674**
 Development of a small television tube for space astronomy
Period *Obligations*
 06/11/73-07/13/73 **FY73: \$71,400** **TOTAL: \$71,400**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Lowrance, J. GSFC/Bogges, A., III 11-Astronomy
 Spitzer, L., Jr.
 (10-850 188-78-57)

NSR 31-001-901 **Princeton University** **2675**
 Ultraviolet spectrographic investigations by high altitude rocket flights
Period *Obligations*
 06/30/67-03/31/74 **FY73: \$211,327** **TOTAL: \$1,494,196**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Lowrance, J. L. HQ-SG/Roman, N. G. 11-Astronomy
 Spitzer, L., Jr. HQ-SG/Ott, E. J.
 (10-850 879-11-00)

NAS 5-9276 **Rutgers University - New Brunswick** **2676**
 OSO-G experiment determination for the brightness polarization and ellipticity of the zodiacal light
Period *Obligations*
 12/12/65-09/01/71 **FY73:** **TOTAL: \$1,911,134**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Rouy, A. L. GSFC/Thole, J. M. 11-Astronomy
 GSFC/Donley, J. D.
 (51-850 821-00-00) (51-850 821-22-00)

NGT 31-004-002 **Rutgers University - New Brunswick** **2677**
 Training of predoctoral graduate students in space-related sciences & technology
Period *Obligations*
 03/12/64-08/01/72 **FY73:** **TOTAL: \$583,421**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Torrey, H. C. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NGR 31-004-049 **Rutgers University - Newark** **2678**
 Zodiacal light experiment of OSO-6
Period *Obligations*
 02/17/72-11/30/73 **FY73: \$30,000** **TOTAL: \$60,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Carroll, B. HQ-SG/Dubin, M. 11-Astronomy
 HQ-SG/McDonald, M. E.
 (10-850 385-45-00)

NAS 1-9349 **Stevens Institute of Technology** **2679**
 Research on aircraft tire hydroplaning
Period *Obligations*
 07/07/69-06/30/73 **FY73:** **TOTAL: \$75,615**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Ehrlich, I. R. LARC/Batterson, S. A. 41-Aero Engr
 (23-760 126-61-12) (23-760 126-00-00)

NASA'S UNIVERSITY PROGRAM

NEW JERSEY (Continued)

NGL 31-003-020 Stevens Institute of Technology 2680
Proximity effects between superconducting and normal metals

Period	FY73:	Obligations	TOTAL:
03/08/65-03/01/74			\$139,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Meissner, H.	HQ-NS/Harrison, H.	13-Physics	
(10-740 129-00-00)	(10-740 129-02-21)		

NEW MEXICO

NAS 2-5795 New Mexico State University - Las Cruces 2681
Payload separation electronics package for SPARCS

Period	FY73:	Obligations	TOTAL:
02/20/70-07/01/71			\$24,921
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bumgarner, R. A.	ARC/Yetka, N. D.	42-Astro Engr	
(21-850 879-00-00)	(21-850 879-40-00)		

NAS 2-6484 New Mexico State University - Las Cruces 2682
SPARCS launch support

Period	FY73:	Obligations	TOTAL:
06/04/71-04/22/74			\$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lawrence, H. R.	ARC/Van Ness, J. C.	49-Engr, NEC	
(21-850 879-40-00)	ARC/Gabris, E. A.		

NAS 5-9558 New Mexico State University - Las Cruces 2683
Theoretical analysis of a multiple-access mode of ATS

Period	FY73:	Obligations	TOTAL:
02/01/65-04/01/75			\$2,470
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
	GSFC/	42-Astro Engr	
(51-620 630-00-00)			

NAS 5-21432 New Mexico State University - Las Cruces 2684
Calibration services for STADAN minitrack antennas

Period	FY73:	Obligations	TOTAL:
07/01/71-06/30/73	\$80,162		\$164,239
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Snow, L. L.	GSFC/Flowers, J.	45-Elec Engr	
(51-500 311-20-20)			

NAS 5-21433 New Mexico State University - Las Cruces 2685
Data reduction for photogenic plates & films

Period	FY73:	Obligations	TOTAL:
07/01/71-06/30/73	\$30,000		\$70,169
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chavez, R.	GSFC/Oosterhout, J. D.	11-Astronomy	
(51-500 311-20-20)			

NAS 5-22203 New Mexico State University - Las Cruces 2686
Minitrack antenna calibration

Period	FY73:	Obligations	TOTAL:
07/01/73-06/30/74	\$10,000		\$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Sayles, A., Jr.	GSFC/Lantz, P. A.	49-Engr, NEC	
(51-500 311-20-20)			

NAS 5-22219 New Mexico State University - Las Cruces 2687
Space tracking and data network (STDN) data reduction

Period	FY73:	Obligations	TOTAL:
07/01/73-06/30/74	\$19,000		\$19,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Sayles, A., Jr.	GSFC/Oosterhout, J.	49-Engr, NEC	
(51-500 311-20-20)			

NAS 5-23001 New Mexico State University - Las Cruces 2688
Telemetry engineering analytical & field support services for sounding rocket program

Period	FY73:	Obligations	TOTAL:
05/11/73-12/31/73	\$1,000,000		\$2,075,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lawrence, R. H.	GSFC/Bissell, E. E.	19-Phys Sci, NEC	
(51-680 607-12-00)	GSFC/Conrad, R. W.	(51-960 996-00-00)	

NAS10-7399 New Mexico State University - Las Cruces 2689
Telemetry research & development in telemetry field services in support of unmanned launch operations

Period	FY73:	Obligations	TOTAL:
12/02/70-12/01/74	\$584,000		\$1,324,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bumgarner, R. A.	KSC/Schlimmer, G. E.	45-Elec Engr	
Noda, T. T.	KSC/MacKey, A. J.		
(76-830 492-02-03)			

NGL 32-003-001 New Mexico State University - Las Cruces 2690
Photographic patrol and study of physical conditions on the moon and planets

Period	FY73:	Obligations	TOTAL:
04/15/61-04/14/76	\$120,356		\$1,550,182
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Smith, B. A.	HQ-SL/Brunk, W. E.	11-Astronomy	
(10-840 196-41-80)	HQ-SL/Fellows, R. F.		
	(10-840 185-00-00)		

NGL 32-003-069 New Mexico State University - Las Cruces 2691
X-ray crystal reflectivity measurements

Period	FY73:	Obligations	TOTAL:
05/01/72-05/01/74			\$13,203
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Liefeld, R. J.	HQ-SG/Roman, N. G.	11-Astronomy	
(10-850 188-00-00)	HQ-SG/Opp, A. G.		

NGR 32-003-037 New Mexico State University - Las Cruces 2692
Study of video processing in low signal to noise environments

Period	FY73:	Obligations	TOTAL:
05/11/67-09/01/73			\$203,728
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Carden, F. F.	JSC/Arndt, G. D.	45-Elec Engr	
(72-910 921-30-00)	(72-910 914-50-00)		

NAS 1-11855 University of New Mexico 2693
Participation in science planning for Viking 1975 missions in area of inorganic chemistry

Period	FY73:	Obligations	TOTAL:
08/18/72-03/01/77	\$13,000		\$13,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Keil, K.	LARC/Soffen, G. A.	12-Chemistry	
(23-840 815-20-00)			

**NASA'S UNIVERSITY PROGRAM
NEW MEXICO (Continued)**

NAS 5-9275	University of New Mexico	2694
High energy neutron flux in space experiment		
<i>Period</i>	<i>Obligations</i>	
12/30/65-08/31/73	FY73: \$28,622	TOTAL: \$1,129,102
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leavitt, C. P.	GSFC/Thole, J. M.	13-Physics
	GSFC/Donley, J. D.	
(51-850 821-22-00)		

NAS 5-9314	University of New Mexico	2695
Solar ultraviolet energy survey experiment for the Orbiting Geophysical Observatories program, OGO-F mission		
<i>Period</i>	<i>Obligations</i>	
03/23/66-09/30/73	FY73:	TOTAL: \$824,000
<i>Prtn. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Regener, V. H.	GSFC/Meesse, K. J.	13-Physics
(51-850 841-00-00)	(51-850 841-12-00)	

NAS 9-12720	University of New Mexico	2696
Improvement of bacterial transport media		
<i>Period</i>	<i>Obligations</i>	
05/15/72-04/01/73	FY73: \$1,914	TOTAL: \$26,907
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gardner, R. L.	JSC/Brockett, R. M.	52-Clinical Med
(72-960 961-50-00)		

NASW 2275	University of New Mexico	2697
Technology application center		
<i>Period</i>	<i>Obligations</i>	
08/27/71-06/30/72	FY73:	TOTAL: \$158,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	HQ-KT/Carlson, J. M.	99-Multi-Discip
	HQ-KT/Philips, R. J.	
(10-250 141-93-00)		

NASW 2399	University of New Mexico	2698
Operation of a regional dissemination center in the technology application center		
<i>Period</i>	<i>Obligations</i>	
09/22/72-06/01/74	FY73: \$190,000	TOTAL: \$190,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shinnick, W. A.	HQ-KT/Holley, H. L.	99-Multi-Discip
(10-250 141-93-01)		

NGL 32-004-011	University of New Mexico	2699
Comparative study of lunar craters and terrestrial volcano-tectonic depressions in rhyolite ash-flow plateaus		
<i>Period</i>	<i>Obligations</i>	
10/12/64-01/01/75	FY73: \$34,880	TOTAL: \$380,880
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Keil, K.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Pomeroy, J. H.	
(10-810 383-09-50)	(10-840 185-00-00)	

NGL 32-004-042	University of New Mexico	2700
The proof-of-concept approach to the design and management of public policy problems		
<i>Period</i>	<i>Obligations</i>	
02/19/68-06/30/74	FY73: \$10,000	TOTAL: \$470,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rosenthal, A. H.	HQ-PY/Morris, J. D.	75-Political Sci
(10-371 340-00-00)	(10-370 183-00-00)	

NGL 32-004-063	University of New Mexico	2701
Lunar sample analysis		
<i>Period</i>	<i>Obligations</i>	
01/06/71-01/31/76	FY73: \$98,375	TOTAL: \$315,975
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Keil, K.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGL 32-004-064	University of New Mexico	2702
Mineralogy and chemistry of polymict-brecciated stone meteorites		
<i>Period</i>	<i>Obligations</i>	
06/14/71-05/31/76	FY73: \$49,063	TOTAL: \$179,363
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Keil, K.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Pomeroy, J. H.	
(10-810 383-09-57)	(10-810 383-09-51)	(10-810 195-42-67)

NGR 32-004-026	University of New Mexico	2703
Numerical study of the flow in the vortex rate sensor		
<i>Period</i>	<i>Obligations</i>	
05/27/66-12/31/72	FY73:	TOTAL: \$75,918
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Richards, C. G.	LARC/Hellbaum, R. F.	46-Mech Engr
(23-750 125-00-00)	(23-760 126-13-10)	(23-702 760-71-04)

NGR 32-004-062 University of New Mexico 2704
Search for evidence of dynamic process
Period *Obligations*
06/22/70-08/31/73 FY73: \$25,000 TOTAL: \$68,260
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Elston, W. E. HQ-SL/Dwornik, S. E. 32-Geological Sci
HQ-SL/Allingham, J. W.
(10-840 384-50-80)

NGR 32-004-068	University of New Mexico	2705
Thermal radiation from interplanetary dust		
<i>Period</i>	<i>Obligations</i>	
12/15/71-11/30/73	FY73: \$25,000	TOTAL: \$51,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Peterson, A. W.	HQ-SG/Dubin, M.	11-Astronomy
	HQ-SG/Bogges, N. W.	
(10-850 188-45-51)		

NGT 32-004-004	University of New Mexico	2706
Training of graduate students in space-related science and technology		
<i>Period</i>	<i>Obligations</i>	
04/11/63-08/01/72	FY73:	TOTAL: \$606,722
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Steger, A.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NASA'S UNIVERSITY PROGRAM

NEW YORK

NAS 9-9964 **Albany Medical College** **2707**
Study of toxicological evaluation of fire suppressants and extinguishers

<i>Period</i>	<i>Obligations</i>	
10/07/69-12/31/73	FY73:	TOTAL: \$286,293
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Coulston, F.	JSC/Harris, E. S.	59-Life Sci, NEC
(72-910 914-50-00)	(72-910 914-51-00)	

NAS 9-12870 **Broome Community College** **2708**
Study of the reaction kinetics for several spacecraft life support systems

<i>Period</i>	<i>Obligations</i>	
06/19/72-08/25/72	FY73:	TOTAL: \$4,080
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Forsythe, R. K.	HQ-EC/Verostko, C. E.	12-Chemistry
(72-910 914-52-00)		

NAS 3-6926 **City College of New York** **2709**
Analytical studies of the feasibility of using solid suspensions in gas flows

<i>Period</i>	<i>Obligations</i>	
12/01/65-07/01/76	FY73:	TOTAL: \$3,552
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	LERC/	42-Astro Engr
(22-710 120-00-00)		

NAS 8-29616 **City College of New York** **2710**
Study of eastern test range ocean wave statistics for space shuttle booster design and recovery operations

<i>Period</i>	<i>Obligations</i>	
06/05/73-12/05/73	FY73: \$10,000	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pierson, W. T.	MSFC/Brown, S. C.	33-Oceanography
	MSFC/Fichtl, G. H.	
(62-920 976-30-00)		

NGL 33-013-029 **City College of New York** **2711**
Effect of particle and fluid properties on heat transfer coefficient and pressure drop of a dilute flowing gas solid suspension

<i>Period</i>	<i>Obligations</i>	
10/04/67-06/01/73	FY73:	TOTAL: \$49,124
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pfeffer, R.	LERC/Putre, H.	13-Physics
(22-720 122-00-00)		

NGL 33-013-034 **City College of New York** **2712**
Investigations of electromagnetics and statistical dynamics as applied to plasma propulsion

<i>Period</i>	<i>Obligations</i>	
03/22/68-03/01/74	FY73:	TOTAL: \$80,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tchen, C. M.	HQ-NS/Thom, K.	13-Physics
(10-740 129-00-00)	(10-740 129-02-22)	

NGL 33-013-040 **City College of New York** **2713**
Theoretical research in astrophysics and astronomy

<i>Period</i>	<i>Obligations</i>	
04/23/69-08/01/74	FY73: \$65,000	TOTAL: \$274,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lea, R. M.	GSFC/Stothers, R. B.	11-Astronomy
	GSFC/Thaddeus, P.	
(51-850 405-02-02)	(51-840 404-02-02)	

NGR 33-013-053 **City College of New York** **2714**
Nonlinear and digital man-machine control-systems modeling

<i>Period</i>	<i>Obligations</i>	
04/07/70-08/31/72	FY73:	TOTAL: \$31,965
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mekel, R.	LARC/Adams, J. J.	99-Multi-Discip
	LARC/Moul, M. T.	
(23-750 125-00-00)		

NGR 33-013-063 **City College of New York** **2715**
Delta modulation systems

<i>Period</i>	<i>Obligations</i>	
05/04/71-01/01/74	FY73: \$35,000	TOTAL: \$90,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schilling, D. L.	JSC/Batson, B. H.	49-Engr, NEC
(72-980 909-41-07)		

NGL 33-007-075 **Clarkson College of Technology** **2716**
Structural synthesis of stiffened shells of revolution

<i>Period</i>	<i>Obligations</i>	
03/14/69-05/01/74	FY73:	TOTAL: \$72,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thornton, W. A.	LARC/Stroud, W. J.	41-Aero Engr
(23-742 124-00-00)	(23-760 126-00-00)	(23-760 126-14-16)

NAS 5-11362 **Columbia University** **2717**
OSO-I wheel experiment hardware

<i>Period</i>	<i>Obligations</i>	
01/28/71-12/30/73	FY73: \$810,000	TOTAL: \$1,848,810
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Novick, R.	GSFC/Donley, J. L.	11-Astronomy
	GSFC/Burrowbridge, D. R.	
(51-850 821-32-00)		

NAS 5-21394 **Columbia University** **2718**
Technical service operations

<i>Period</i>	<i>Obligations</i>	
03/15/71-03/01/72	FY73: \$2,507	TOTAL: \$42,535
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	GSFC/Levine, A. L.	99-Multi-Discip
	GSFC/Thaddeus, P.	
(51-680 408-02-01)	(51-850 405-02-01)	

NAS 5-22042 **Columbia University** **2719**
Acquisition, processing and cataloging of books, periodicals and other literature for GISS

<i>Period</i>	<i>Obligations</i>	
03/15/72-03/14/73	FY73:	TOTAL: \$41,240
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Burlingame, A.	GSFC/Levine, A. L.	99-Multi-Discip
	GSFC/Thaddeus, P.	
(51-680 408-02-01)		

NASA'S UNIVERSITY PROGRAM **NEW YORK (Continued)**

NAS 8-26841 **Columbia University** **2720**
Long wavelength cosmic X-ray survey with a large area focusing collector

Period	Obligations
02/01/71-08/31/72	FY73: TOTAL: \$421,825
Prin. Invest.	NASA Tech. Officer
Novick, R.	MSFC/Potter, R. A.
(62-850 188-00-00)	(62-850 832-12-00) (62-850 188-78-53)
	CASE Category
	11-Astronomy

NAS 8-27405 **Columbia University** **2721**
Bragg Crystal X-ray spectrometer HEAO mission experiment feasibility study

Period	Obligations
06/08/71-02/28/73	FY73: \$149,000 TOTAL: \$278,000
Prin. Invest.	NASA Tech. Officer
Angel, J. R.	MSFC/Neuschaefer, R. W.
(62-850 832-12-00)	(62-850 832-12-00)
	CASE Category
	11-Astronomy

NAS 8-27970 **Columbia University** **2722**
Design and development of the HEAO large area focusing collector experiment

Period	Obligations
06/27/72-03/15/77	FY73: TOTAL: \$653,618
Prin. Invest.	NASA Tech. Officer
Novick, R.	MSFC/Lavender, R. E.
(62-850 832-12-00)	MSFC/Jones, J. B.
	CASE Category
	11-Astronomy

NAS 8-29702 **Columbia University** **2723**
HEAO study (AXR-1)

Period	Obligations
03/16/73-07/31/73	FY73: \$25,000 TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer
Novick, R.	MSFC/Neuschaefer, R. W.
Weisskopf, M. C.	MSFC/Jones, J. B.
(62-850 832-12-00)	
	CASE Category
	11-Astronomy

NAS 8-29703 **Columbia University** **2724**
HEAO study (BXR-2)

Period	Obligations
03/16/73-07/31/73	FY73: \$25,000 TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer
Angel, J. R.	MSFC/Neuschaefer, R. W.
Woodgate, B. E.	MSFC/Jones, J. B.
(62-850 832-12-00)	
	CASE Category
	31-Atmos Sci

NAS 9-5957 **Columbia University** **2725**
Passive seismic experiment for ALSEP

Period	Obligations
05/26/66-03/01/73	FY73: TOTAL: \$1,942,250
Prin. Invest.	NASA Tech. Officer
Latham, G. H.	JSC/Eichleman, W. F.
(72-910 914-40-00)	(72-960 942-92-00)
	CASE Category
	31-Atmos Sci

NAS 9-6037 **Columbia University** **2726**
Heat flow experiment for ALSEP

Period	Obligations
06/06/66-08/31/73	FY73: \$124,000 TOTAL: \$1,264,100
Prin. Invest.	NASA Tech. Officer
Langseth, M. G.	JSC/Eichleman, W. F.
(72-910 914-40-00)	
	CASE Category
	19-Phys Sci, NEC

NAS 9-11751 **Columbia University** **2727**
Pi services traverse gravimeter

Period	Obligations
06/22/71-12/31/73	FY73: \$139,000 TOTAL: \$239,000
Prin. Invest.	NASA Tech. Officer
Talwani, M.	JSC/White, T. T.
(72-910 914-40-00)	
	CASE Category
	19-Phys Sci, NEC

NGL 33-008-009 **Columbia University** **2728**
Investigation of properties of helium & lithium atoms & ions with emphasis on excited energy levels & the mechanism of energy transfer from metastable states

Period	Obligations
03/29/63-12/01/72	FY73: TOTAL: \$451,970
Prin. Invest.	NASA Tech. Officer
Novick, R.	HQ-NS/Thom, K.
(10-740 129-00-00)	
	CASE Category
	12-Chemistry

NGL 33-008-012 **Columbia University** **2729**
Theoretical research in space science

Period	Obligations
07/18/63-08/01/74	FY73: \$169,000 TOTAL: \$1,944,993
Prin. Invest.	NASA Tech. Officer
Woltjer, L.	GSFC/Thaddeus, P.
(51-680 408-02-02)	HQ-PY/Redding, E. R.
	CASE Category
	19-Phys Sci, NEC

NGL 33-008-098 **Columbia University** **2730**
Research into the theory of the superboom

Period	Obligations
08/31/67-07/01/72	FY73: TOTAL: \$180,498
Prin. Invest.	NASA Tech. Officer
Friedman, M. B.	LARC/
(10-740 129-00-00)	LARC/Carlson, H. W.
	(10-740 129-01-20) (10-760 136-13-02)
	CASE Category
	41-Aero Engr

NGL 33-008-118 **Columbia University** **2731**
Reactions of people to aircraft noise & sonic booms

Period	Obligations
04/04/69-05/01/73	FY73: \$125,000 TOTAL: \$560,415
Prin. Invest.	NASA Tech. Officer
Borsky, P. N.	LARC/Edge, P. M., Jr.
(23-704 501-29-11)	LARC/Cawthorn, J. M.
	(23-770 127-49-25) (23-770 137-09-02)
	CASE Category
	62-Social Aspects

NGL 33-008-182 **Columbia University** **2732**
Multidisciplinary research in space sciences

Period	Obligations
02/15/73-02/14/76	FY73: \$396,519 TOTAL: \$396,519
Prin. Invest.	NASA Tech. Officer
Foley, H. M.	GSFC/Thaddeus, P.
Hartmann, S.	GSFC/Piper, G.
Woltjer, L.	
(51-680 408-02-02)	(51-840 404-02-02) (51-850 405-02-02)
	CASE Category
	99-Multi-Discip

NGR 33-008-102 **Columbia University** **2733**
Research in X-ray astronomy

Period	Obligations
01/30/68-12/29/74	FY73: \$195,000 TOTAL: \$863,840
Prin. Invest.	NASA Tech. Officer
Novick, R.	HQ-SG/Roman, N. G.
(10-850 188-41-59)	HQ-SG/Ort, E. J.
	(10-850 879-11-00)
	CASE Category
	11-Astronomy

**NASA'S UNIVERSITY PROGRAM
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NGR 33-008-106 **Columbia University** **2734**
The structural geometry and tectonic history of the Sudbury Basin
Canadian shield
Period *Obligations*
06/30/71-06/01/73 **FY73:** **TOTAL: \$45,774**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Dalziel, I. W. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-MA/Allenby, R. J.
(10-810 195-42-64)

NGR 33-008-125 **Columbia University** **2735**
Solar X-ray astronomy polarization study of solar X-ray flares
Period *Obligations*
10/02/69-09/30/73 **FY73: \$25,006** **TOTAL: \$176,242**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Novick, R. HQ-SG/Oertel, G. K. 11-Astronomy
HQ-SG/Weldon, J. M.
(10-850 385-38-00)

NGR 33-008-146 **Columbia University** **2736**
Study of strain buildup, release and earthquake prediction
Period *Obligations*
02/09/71-05/31/73 **FY73: \$24,738** **TOTAL: \$49,457**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Sykes, L. R. GSFC/Smith, D. E. 19-Phys Sci, Nt C
Scholz, C. H.
(51-630 161-79-51)

NGR 33-008-158 **Columbia University** **2737**
Mosaic crystal devices for stellar and solar X-ray spectroscopy
and polarimetry
Period *Obligations*
11/04/71-06/30/73 **FY73:** **TOTAL: \$75,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Novick, R. HQ-SG/Bogges, N. W. 11-Astronomy
HQ-SG/Roman, N. G.
(10-850 188-41-59)

NGR 33-008-168 **Columbia University** **2738**
Economic impact of the NASA program
Period *Obligations*
09/21/71-02/28/74 **FY73:** **TOTAL: \$71,850**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Ginzberg, E. HQ-PY/Morris, J. D. 72-Economics
HQ-PY/Morris, J. D.
(10-371 340-00-00)

NGR 33-008-169 **Columbia University** **2739**
Lunar sample analysis
Period *Obligations*
11/01/72-01/31/74 **FY73: \$25,500** **TOTAL: \$25,500**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Horai, K. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGR 33-008-174 **Columbia University** **2740**
In situ temperature measurement
Period *Obligations*
04/03/72-09/01/73 **FY73: \$4,930** **TOTAL: \$27,930**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Horai, K. JSC/Strangway, D. W. 13-Physics
(72-810 195-42-60) (72-950 951-16-00)

NGR 33-008-177 **Columbia University** **2741**
Lunar sample analysis
Period *Obligations*
11/01/72-01/31/74 **FY73: \$15,200** **TOTAL: \$15,200**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Horai, K. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGT 33-008-013 **Columbia University** **2742**
Training of predoctoral graduate students in space-related science
& technology
Period *Obligations*
05/16/63-08/01/72 **FY73:** **TOTAL: \$1,116,228**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Robey, R. C. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 1-9683 **Cornell University** **2743**
Participation in the science planning for the Viking 1975 missions
in the area of imaging
Period *Obligations*
04/08/70-03/31/77 **FY73: \$69,249** **TOTAL: \$138,703**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Sagan, C. LARC/Soffen, G. A. 13-Physics
(23-840 815-20-00)

NAS 2-5643 **Cornell University** **2744**
Study of sequential decoding
Period *Obligations*
09/01/69-08/01/71 **FY73:** **TOTAL: \$84,133**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Jellnik, F. ARC/Hoffman, L. B. 45-Elec Engr
(21-750 125-00-00)

NAS 2-6065 **Cornell University** **2745**
Study on cells & embryogenesis in space
Period *Obligations*
07/21/70-06/30/73 **FY73: \$32,300** **TOTAL: \$99,500**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Steward, F. C. ARC/Tremor, J. W. 51-Biology
(21-970 970-21-62) (21-870 189-00-00)

NAS 5-21781 **Cornell University** **2746**
Phenology experiment using ERTS-A data
Period *Obligations*
08/08/72-09/01/73 **FY73: \$233,763** **TOTAL: \$233,763**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Dethier, B. E. GSFC/Szajna, E. J. 39-Env Sci, NEC
(51-680 641-14-01)

NAS 5-21844 **Cornell University** **2747**
Engineering analysis of ERTS data for southeast Asian agricul-
ture
Period *Obligations*
10/02/72-04/01/74 **FY73: \$100,986** **TOTAL: \$100,986**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
McNair, A. J. GSFC/Szajna, E. F. 59-Life Sci, NEC
(51-680 641-14-01)

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NAS 5-21886 **Cornell University** **2748**
An ERTS-A investigation for evaluation of satellite sensed information

Period	Obligations
10/13/72-02/01/74	FY73: \$124,000 TOTAL: \$124,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hardy, E. E.	GSFC/Szajna, E. W. 32-Geological Sci

(51-680 641-14-02)

NAS 5-23236 **Cornell University** **2749**
Feasibility study for infrared interferometer, spectrometer, & radiometer for Mariner/Jupiter 1977 launch

Period	Obligations
05/01/73-08/31/73	FY73: \$2,500 TOTAL: \$2,500
Prin. Invest.	NASA Tech. Officer CASE Category
Gierasch, P. J.	GSFC/Conrath, B. J. 31-Atmos Sci

(51-840 802-31-00)

NAS 9-10657 **Cornell University** **2750**
Study and interpretation of lunar close-up stereo photography

Period	Obligations
03/26/70-11/01/71	FY73: TOTAL: \$48,036
Prin. Invest.	NASA Tech. Officer CASE Category
Gold, T.	JSC/Pearce, F. 31-Atmos Sci

(72-910 914-40-00)

NAS 9-11030 **Cornell University** **2751**
Nutrition and musculo-skeletal function mineral metabolism studies

Period	Obligations
06/25/70-08/15/72	FY73: TOTAL: \$38,000
Prin. Invest.	NASA Tech. Officer CASE Category
Lutwak, L.	JSC/Rambaut, P. C. 52-Clinical Med
	JSC/Smith, M. C.

(72-960 948-60-00) (72-960 948-60-90)

NAS 9-13364 **Cornell University** **2752**
Evaluation of satellite imagery & an information service for inventorying land use & natural resources

Period	Obligations
04/24/73-11/30/74	FY73: \$56,000 TOTAL: \$56,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hardy, E. E.	JSC/Hicks, R. D. 39-Env Sci, NEC

(72-960 948-63-85)

NASW 2366 **Cornell University** **2753**
Development of control elements for an unmanned extraterrestrial vehicle

Period	Obligations
03/22/72-06/14/72	FY73: TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer CASE Category
Wehe, R. L.	HQ-SL/Tarver, P. 42-Astro Engr
	HQ-SL/Herman, D. H.

(10-840 186-68-55)

NASW 2445 **Cornell University** **2754**
Development of control elements for an unmanned Martian roving vehicle

Period	Obligations
12/11/72-06/30/73	FY73: \$95,000 TOTAL: \$95,000
Prin. Invest.	NASA Tech. Officer CASE Category
	HQ-SL/ 32-Geological Sci

(10-840 186-68-55)

NGL 33-010-005 **Cornell University** **2755**
Studies of lunar surface & solar atmosphere in vicinity of the moon

Period	Obligations
03/13/63-10/31/75	FY73: \$19,000 TOTAL: \$1,595,950
Prin. Invest.	NASA Tech. Officer CASE Category
Gold, T.	HQ-SM/Bryson, R. P. 19-Phys Sci, NEC
	HQ-SM/Allenby, R. J.

(10-810 383-09-50) (10-840 185-00-00) (10-850 188-00-00)

NGL 33-010-042 **Cornell University** **2756**
Study of high temperature heat transfer

Period	Obligations
06/29/66-06/01/74	FY73: \$50,000 TOTAL: \$406,016
Prin. Invest.	NASA Tech. Officer CASE Category
Moore, F. K.	LERC/Evvard, J. C. 46-Mech Engr

(22-704 503-04-01) (22-720 112-28-20)

NGL 33-010-047 **Cornell University** **2757**
Research into advanced concepts of microwave power amplification & generation utilizing linear beam devices

Period	Obligations
11/22/66-10/01/72	FY73: TOTAL: \$146,288
Prin. Invest.	NASA Tech. Officer CASE Category
McIsaac, P. R.	GSFC/Hughes, W. E. 45-Elec Engr

(25-750 125-00-00) (51-750 125-00-00)

NGL 33-010-054 **Cornell University** **2758**
Sonic boom research

Period	Obligations
09/14/67-08/01/74	FY73: TOTAL: \$201,500
Prin. Invest.	NASA Tech. Officer CASE Category
Seebass, A. R.	LARC/ 13-Physics
George, A. R.	LARC/Carlson, H.

(10-740 129-00-00) (23-760 136-13-02) (10-740 129-01-20)

NGL 33-010-064 **Cornell University** **2759**
Molecular energy transfer by fluid mixing

Period	Obligations
03/29/68-12/29/74	FY73: \$45,000 TOTAL: \$243,492
Prin. Invest.	NASA Tech. Officer CASE Category
Cool, T. A.	LARC/Allario, F. 13-Physics
	HQ-NS/Thom, K.

(10-704 503-10-01)

NGL 33-010-070 **Cornell University** **2760**
Finite element shell instability analysis

Period	Obligations
12/16/68-10/01/74	FY73: TOTAL: \$175,170
Prin. Invest.	NASA Tech. Officer CASE Category
Gallagher, R. H.	LARC/Fulton, R. E. 41-Aero Engr

(23-760 126-00-00) (23-740 134-14-05) (23-760 126-14-16)

NGL 33-010-082 **Cornell University** **2761**
The study of lunar and planetary surfaces and atmospheres

Period	Obligations
09/23/68-08/01/74	FY73: \$74,133 TOTAL: \$339,647
Prin. Invest.	NASA Tech. Officer CASE Category
Sagan, C.	HQ-SL/Fellows, R. F. 31-Atmos Sci
Veverka, J.	

(10-840 185-47-81)

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NGL 33-010-171 **Cornell University** **2762**
 A program in remote sensing
Period *Obligations*
 02/14/72-05/31/76 FY73: \$100,000 TOTAL: \$300,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Liang, T. HQ-PY/Vitale, J. A. 39-Env Sci, NEC
 (10-371 340-00-00)

NGL 33-010-186 **Cornell University** **2763**
 Studies of thermal structure and motion of planetary atmospheres
Period *Obligations*
 04/18/73-06/14/76 FY73: \$52,400 TOTAL: \$52,400
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 HQ-SL/ 31-Atmos Sci
 (10-840 185-47-81)

NGR 33-010-051 **Cornell University** **2764**
 Theoretical and experimental studies of ionized rare gas lasers
Period *Obligations*
 02/01/68-01/31/73 FY73: TOTAL: \$29,715
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Tang, C. L. HQ-RE/ 13-Physics
 GSFC/Degnan, J. J.
 (51-750 125-00-00)

NGR 33-010-071 **Cornell University** **2765**
 Graduate engineering design program
Period *Obligations*
 05/15/68-08/01/72 FY73: TOTAL: \$150,052
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 McHanus, H. N. HQ-PY/Vitale, J. A. 49-Engr, NEC
 (10-370 183-00-00)

NGR 33-010-081 **Cornell University** **2766**
 Two to four micron spectroscopy of Mars
Period *Obligations*
 03/01/73-02/28/74 FY73: \$17,600 TOTAL: \$17,600
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Houck, J. R. ARC/Cameron, R. M. 11-Astronomy
 ARC/Gillespie, C. M.
 (21-850 352-02-03)

NGR 33-010-101 **Cornell University** **2767**
 An integrated program in exobiology and problems related to origin of life
Period *Obligations*
 10/09/69-06/30/73 FY73: \$75,000 TOTAL: \$285,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Sagan, C. HQ-SL/Young, R. S. 12-Chemistry
 (10-840 192-55-61)

NGR 33-010-108 **Cornell University** **2768**
 Implications of convection within the moon
Period *Obligations*
 05/18/70-08/31/72 FY73: TOTAL: \$37,530
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Turcotte, D. L. HQ-SM/Bryson, R. P. 32-Geological Sci
 HQ-SM/Allenby, R. J.
 (10-810 383-00-00) (10-810 383-09-50) (10-810 383-09-53)

NGR 33-010-127 **Cornell University** **2769**
 Detection of soil microorganisms in situ by combined gas chromatography
Period *Obligations*
 06/02/70-08/31/73 FY73: \$31,635 TOTAL: \$108,632
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Duxbury, J. M. HQ-SL/Geib, D. S. 51-Biology
 Alexander, M.
 (10-840 192-55-63)

NGR 33-010-137 **Cornell University** **2770**
 Lunar sample analysis
Period *Obligations*
 02/12/71-01/31/74 FY73: TOTAL: \$147,600
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gold, T. JSC/Harris, J. W. 13-Physics
 (72-910 914-40-00)

NGR 33-010-145 **Cornell University** **2771**
 Cosmic gamma-ray telescope
Period *Obligations*
 01/06/71-08/31/73 FY73: \$83,900 TOTAL: \$205,900
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Greisen, K. I. HQ-SG/Opp, A. G. 11-Astronomy
 HQ-SG/Roman, N. G.
 (10-850 188-46-54)

NGR 33-010-146 **Cornell University** **2772**
 Submillimeter astronomical spectrometry from aircraft
Period *Obligations*
 02/16/72-01/31/73 FY73: \$22,800 TOTAL: \$42,800
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Harwit, M. O. ARC/Cameron, R. M. 11-Astronomy
 ARC/Mason, R. H.
 (21-850 352-02-01)

NGR 33-010-161 **Cornell University** **2773**
 Studies of the magnetospheres of Earth and Jupiter
Period *Obligations*
 01/18/72-12/31/73 FY73: \$27,790 TOTAL: \$57,790
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Brice, N. M. HQ-SG/Hallenbeck, D. R. 13-Physics
 HQ-SG/Fellows, R. F.
 (10-840 185-47-81) (10-850 188-36-55)

NGR 33-010-166 **Cornell University** **2774**
 Lunar sample analysis
Period *Obligations*
 04/12/72-01/31/74 FY73: \$40,600 TOTAL: \$79,700
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Morrison, G. H. JSC/Harris, J. W. 12-Chemistry
 (72-910 914-40-00)

NGR 33-010-169 **Cornell University** **2775**
 Analysis of a partially filled viscous ring damper
Period *Obligations*
 02/01/72-09/18/73 FY73: \$5,099 TOTAL: \$19,460
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Alfrend, K. T. GSFC/Hrastar, J. A. 49-Engr, NEC
 (51-840 823-12-00) (51-620 164-76-51)

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NGR 33-010-178 **Cornell University** **2776**
Analysis of Apollo 12 and Explorer 35 magnetometer data

Period	Obligations	
06/13/72-06/30/74	FY73: \$22,150	TOTAL: \$41,693
Prin. Invest.	NASA Tech. Officer	CASE Category
Kuckes, A. F.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	
(10-810 383-09-56)	(10-810 383-09-53)	

NGR 33-010-179 **Cornell University** **2777**
Central neural mechanisms governing postural cardiovascular reflexes

Period	Obligations	
05/25/72-06/14/74	FY73: \$43,000	TOTAL: \$87,760
Prin. Invest.	NASA Tech. Officer	CASE Category
Reis, D. J.	ARC/Sandler, H.	53-Other Medical
(21-970 970-21-12)		

NGR 33-010-182 **Cornell University** **2778**
Sixteen to forty micron spectroscopy of Jupiter

Period	Obligations	
12/20/72-09/30/73	FY73: \$21,996	TOTAL: \$21,996
Prin. Invest.	NASA Tech. Officer	CASE Category
Houck, J. R.	ARC/Mason, R. H.	11-Astronomy
Pollack, J. B.	ARC/Cameron, R. M.	
(21-850 352-02-01)	(21-980 975-50-01)	

NGR 33-010-188 **Cornell University** **2779**
Astrophysical material science theory

Period	Obligations	
02/00/32-07/01/73	FY73: \$34,000	TOTAL: \$34,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ashcroft, N. W.	LERC/Laurence, J. C.	13-Physics
Krumhansl, J. A.	LERC/Brown, G. V.	
(22-704 502-04-35)		

NGR 33-010-189 **Cornell University** **2780**
Ultra pressure materials science

Period	Obligations	
02/00/32-07/01/73	FY73: \$60,000	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ruoff, A. L.	LERC/Laurence, J. C.	13-Physics
Ashcroft, N. W.	LERC/Coles, W. D.	
(22-704 502-04-35)		

NSR 33-010-055 **Cornell University** **2781**
An investigation directed toward designing, developing and testing the components of a total control lunar roving vehicle

Period	Obligations	
06/27/67-08/15/72	FY73:	TOTAL: \$281,381
Prin. Invest.	NASA Tech. Officer	CASE Category
Wehe, R. L.	HQ-SL/Tarver, P.	42-Astro Engr
(10-840 186-00-00)		

NAS 2-5610 **Dudley Observatory** **2782**
Zodiacal light experiment

Period	Obligations	
01/02/70-03/01/72	FY73: \$15,770	TOTAL: \$137,671
Prin. Invest.	NASA Tech. Officer	CASE Category
Weinberg, J. L.	ARC/Hall, C. F.	11-Astronomy
(21-840 811-22-00)	(21-840 811-00-00)	

NAS 2-6560 **Dudley Observatory** **2783**
Data analysis of Pioneer F/G zodiacal light experiment

Period	Obligations	
09/30/71-06/30/72	FY73: \$117,500	TOTAL: \$217,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Weinberg, J. L.	ARC/Hall, C. F.	11-Astronomy
(21-840 811-22-00)		

NAS 8-24865 **Dudley Observatory** **2784**
Preliminary design of S073 gegenschein /zodiacal light experiment

Period	Obligations	
04/01/69-12/01/74	FY73: \$322,317	TOTAL: \$1,172,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Weinberg, J. L.	MSFC/Chisolm, W. L., Jr.	11-Astronomy
(62-960 948-70-70)	(62-960 964-50-00)	

NAS 9-10380 **Dudley Observatory** **2785**
Micro particle collector experiment

Period	Obligations	
12/12/69-01/31/75	FY73: \$353,000	TOTAL: \$1,025,596
Prin. Invest.	NASA Tech. Officer	CASE Category
Hemenway, C. L.	JSC/Reina, B., Jr.	39-Env Sci, NEC
(72-960 948-80-81)		

NAS 9-12539 **Dudley Observatory** **2786**
Study of Skylab coronagraph contamination measurement experiment

Period	Obligations	
03/01/72-01/31/73	FY73: \$236,200	TOTAL: \$286,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Greenberg, J. M.	JSC/Levin, R. R.	31-Atmos Sci
(72-960 948-80-80)		

NAS 9-12557 **Dudley Observatory** **2787**
Principal investigator support of the low brightness image data analysis

Period	Obligations	
02/29/72-01/31/74	FY73:	TOTAL: \$78,486
Prin. Invest.	NASA Tech. Officer	CASE Category
Mercer, R. D.	JSC/Hardee, S. N.	11-Astronomy
(72-910 914-49-00)		

NGL 33-011-001 **Dudley Observatory** **2788**
Collection & analysis of micrometeorites

Period	Obligations	
06/01/61-02/01/74	FY73: \$150,000	TOTAL: \$1,667,213
Prin. Invest.	NASA Tech. Officer	CASE Category
Hemenway, C. L.	HQ-SG/Dubin, M.	11-Astronomy
	HQ-SG/Ott, E. J.	
(10-850 385-45-00)	(10-850 879-11-00)	(10-850 879-00-00)

NGR 33-011-017 **Dudley Observatory** **2789**
Photoelectric studies of the nightglow

Period	Obligations	
04/20/70-12/31/72	FY73: \$36,000	TOTAL: \$165,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Weinberg, J. L.	HQ-SG/Dubin, M.	11-Astronomy
(10-850 188-45-51)	(10-850 188-00-00)	

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NGR 33-011-031 Dudley Observatory 2790
Apollo orbital science photographic team
Period *Obligations*
02/10/71-06/30/73 FY73: TOTAL: \$18,770
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mercer, R. HQ-SM/Esenwein, G. F. 11-Astronomy
HQ-MA/Roberson, F. I.
(10-910 914-50-00)

NGR 33-011-043 Dudley Observatory 2791
Zodiacal light as produced by combination of rough and nonspherical particles of interplanetary and interstellar origin
Period *Obligations*
04/26/72-02/28/74 FY73: \$20,000 TOTAL: \$40,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Greenberg, J. M. HQ-SG/Dubin, M. 11-Astronomy
(10-850 188-45-51)

NAS 9-11839 Fordham University 2792
Apollo time and motion study
Period *Obligations*
05/26/71-06/30/73 FY73: TOTAL: \$60,796
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kubis, J. F. JSC/Moseley, E. C. 59-Life Sci, NEC
(72-910 914-50-00)

NGT 33-012-002 Fordham University 2793
Training of predoctoral graduate students in space-related sciences & technology
Period *Obligations*
03/13/64-08/01/72 FY73: TOTAL: \$223,950
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Finley, J. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NSR 33-012-006 Fordham University 2794
Time and motion experiment
Period *Obligations*
06/30/67-06/30/74 FY73: \$59,198 TOTAL: \$557,156
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kubis, J. F. JSC/Fedderson, W. E. 69-Psych, NEC
(72-960 948-60-91) (72-960 948-60-00)

NGR 33-192-001 Hamilton College 2795
Photographic interpretation of Mariner-Mars 6 and 7 photographs on the chaotic terrain
Period *Obligations*
04/23/70-05/31/73 FY73: TOTAL: \$33,360
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Poller, D. B. HQ-SL/Dwornik, S. E. 32-Gelological Sci
HQ-SL/Allingham, J. W.
(10-840 384-50-80) (10-840 384-00-00)

NGR 33-209-002 Hofstra University 2796
Wave height measurements with a correlation radar
Period *Obligations*
02/28/72-01/31/74 FY73: \$16,049 TOTAL: \$26,984
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Weissman, R. S. LARC/Swift, C. T. 45-Elec Engr
(23-680 160-20-54)

NAS 5-21792 Long Island University 2797
Interdisciplinary study of the estuarine and coastal oceanography of Block Island sounds and adjacent New York coastal waters
Period *Obligations*
06/30/72-09/01/73 FY73: \$87,344 TOTAL: \$109,844
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Yost, E. GSFC/Szajna, E. J. 33-Oceanography
Hollman, R.
(51-680 641-14-05) (51-680 641-14-00)

NAS 5-21793 Long Island University 2798
In situ spectroradiometric quantifications of ERTS data
Period *Obligations*
06/30/72-09/30/73 FY73: TOTAL: \$36,833
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Yost, E. GSFC/Szajna, E. F. 32-Gelological Sci
(51-680 641-14-00)

NGR 33-151-006 Long Island University 2799
Photographic techniques for transforming multispectral photographic imagery into geologic information
Period *Obligations*
12/01/72-11/01/73 FY73: \$5,191 TOTAL: \$5,191
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Yost, E. GSFC/Hogan, J. S. 32-Gelological Sci
GSFC/Hansen, J.
(51-680 408-02-02)

NGR 33-202-001 Mt Sinai Sch of Med of The Cuny 2800
Biochemical purification and characterization of echinoderm mucoids and proteins possessing adhesive properties
Period *Obligations*
01/07/71-04/30/73 FY73: TOTAL: \$26,600
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rule, A. H. ARC/Harrison, G. A. 51-Biology
(21-970 970-23-30) (21-770 127-49-37) (21-770 127-00-00)

NGR 33-230-001 New York Institute of Technology 2801
Proposed novel techniques for interferometrically controlled ruling of improved large diffraction gratings
Period *Obligations*
10/16/72-10/01/73 FY73: \$68,970 TOTAL: \$68,970
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Stroke, G. W. GSFC/Mangus, J. D. 19-Phys Sci, NEC
(51-850 188-38-51)

NGR 33-230-002 New York Institute of Technology 2802
Holographic restoration of picture perfection in space imaging applications
Period *Obligations*
10/03/72-06/01/73 FY73: \$23,375 TOTAL: \$23,375
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Stroke, G. W. HQ-SG/Weldon, J. M. 11-Astronomy
HQ-SG/Oertel, G. K.
(10-850 188-38-53)

NAS 1-10090 New York University 2803
Development of the composite radiometer scatterometer (RADSCAT) experiment (part A ocean surface modeling and electromagnetic scattering)
Period *Obligations*
06/08/70-06/30/73 FY73: \$15,000 TOTAL: \$117,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Pierson, W. J. LARC/Jones, W. L. 99-Multi-Discip
(23-620 630-52-00) (23-620 630-00-00)

NASA'S UNIVERSITY PROGRAM **NEW YORK (Continued)**

NAS 1-10282 **New York University** **2804**
 An experimental flight program designed to measure biologically significant radiation components at supersonic transport cruise altitude

Period	Obligations	
09/01/70-02/28/73	FY73: \$29,588	TOTAL: \$317,702
Prin. Invest.	NASA Tech. Officer	CASE Category
Korer, S. A.	LARC/Freeman, R. S.	31-Atmos Sci
(23-704 501-08-10)	(23-704 503-10-04)	(23-760 720-00-00)

NAS 2-6813 **New York University** **2805**
 Study transonic rotary wing aerodynamics

Period	Obligations	
02/18/72-08/08/73	FY73:	TOTAL: \$30,948
Prin. Invest.	NASA Tech. Officer	CASE Category
Isom, M. P.	ARC/Caradonna, F. X.	41-Aero Engr
(21-760 136-9X-00)	ARC/McCroskey, W. J.	

NAS 5-21666 **New York University** **2806**
 Study of spatial distribution of atmospheric turbidity and transmissivity by laser radar techniques

Period	Obligations	
10/05/71-10/05/73	FY73:	TOTAL: \$49,976
Prin. Invest.	NASA Tech. Officer	CASE Category
Schotland, R. M.	GSFC/Ostrow, H.	31-Atmos Sci
(51-680 160-20-53)		

NAS 8-29578 **New York University** **2807**
 Study of eastern test range ocean wave statistics for space shuttle booster design & recovery operations

Period	Obligations	
02/05/73-06/05/73	FY73: \$10,000	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Pierson, W. J.	MSFC/Brown, S. C.	33-Oceanography
(62-920 976-30-00)	MSFC/Fichtl, G. H.	

NAS 9-13356 **New York University** **2808**
 Investigation Skylab data no. 550

Period	Obligations	
03/14/73-06/30/73	FY73: \$98,073	TOTAL: \$98,073
Prin. Invest.	NASA Tech. Officer	CASE Category
Pierson, W. J., Jr.	JSC/Byrns, Z. H.	39-Env Sci, NEC
(72-960 948-63-84)		

NGL 33-016-013 **New York University** **2809**
 Theoretical research on the properties of the atmosphere of the earth and other planets and on the atmospheric effects of solar activity

Period	Obligations	
06/01/73-05/01/75	FY73:	TOTAL: \$521,181
Prin. Invest.	NASA Tech. Officer	CASE Category
Schaeffer, O. A.	GSFC/Halem, M.	31-Atmos Sci
(51-680 160-00-00)	GSFC/Hansen, J. E.	(10-370 183-00-00)
	(51-680 408-02-02)	

NGL 33-016-119 **New York University** **2810**
 Engine effect on sonic boom; unsteady engine inlet interaction

Period	Obligations	
06/20/67-07/01/73	FY73: \$65,000	TOTAL: \$389,720
Prin. Invest.	NASA Tech. Officer	CASE Category
Ferri, A.	LARC/Fetterman, D. E.	41-Aero Engr
(23-704 501-06-11)	(10-740 129-00-00)	(10-740 129-01-11)

NGL 33-016-149 **New York University** **2811**
 Wind tunnel model study of dispersion of carbon monoxide in city streets

Period	Obligations	
04/07/69-02/01/73	FY73:	TOTAL: \$99,999
Prin. Invest.	NASA Tech. Officer	CASE Category
Haydysh, W. E.	HQ-RA/Roudebush, W. H.	46-Mech Engr
(10-740 129-00-00)	(22-740 129-00-00)	(22-740 129-01-21)

NGR 33-016-102 **New York University** **2812**
 Biological effects of radiation on metabolic and replication kinetics alterations

Period	Obligations	
04/12/67-06/30/73	FY73: \$25,000	TOTAL: \$162,269
Prin. Invest.	NASA Tech. Officer	CASE Category
Post, J.	JSC/Bailey, J. V.	52-Clinical Med
(72-970 970-51-63)	JSC/Barnes, C. A.	(10-870 189-54-62)
	(10-870 189-00-00)	

NGR 33-016-131 **New York University** **2813**
 Hypersonic engine airplane integration

Period	Obligations	
03/11/68-07/31/73	FY73: \$103,960	TOTAL: \$738,906
Prin. Invest.	NASA Tech. Officer	CASE Category
Ferri, A.	LARC/Huber, P. W.	41-Aero Engr
(23-704 501-04-03)	LARC/Henry, J. R.	
	(23-760 722-01-10)	

NGR 33-016-167 **New York University** **2814**
 Numerical design of transonic shockless airfoils

Period	Obligations	
09/01/70-09/30/74	FY73: \$100,000	TOTAL: \$305,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Garabedian, P. R.	LARC/South, J. C., Jr.	41-Aero Engr
Jameson, G. A.	LARC/Bland, S. R.	
Korn, D. G.		
(23-702 760-64-60)	(23-704 501-06-01)	(23-704 501-22-04)

NGR 33-016-174 **New York University** **2815**
 Investigation of models for large scale meteorological prediction experiments

Period	Obligations	
11/01/71-10/31/73	FY73: \$42,000	TOTAL: \$84,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Spar, J.	GSFC/Halem, M.	31-Atmos Sci
(51-680 408-02-02)	GSFC/Holan, J. S.	

NGR 33-016-177 **New York University** **2816**
 Fluid dynamic aspects of jet noise generation

Period	Obligations	
08/29/72-08/01/73	FY73: \$56,378	TOTAL: \$56,378
Prin. Invest.	NASA Tech. Officer	CASE Category
Ferri, A.	LARC/Maestrello, L.	41-Aero Engr
(23-704 501-04-01)	LARC/McDaid, E. P.	

NASA'S UNIVERSITY PROGRAM
NEW YORK (Continued)

NGR 33-016-179 **New York University** **2817**
 Reynolds number and Mach number effect on space shuttle configuration
Period *Obligations*
 09/01/71-08/31/73 FY73: \$49,990 TOTAL: \$99,995
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Zakkay, V. LARC/Dunavant, J. C. 41-Aero Engr
 LARC/Whitehead, A. H., Jr.
 (23-704 502-37-01)

NGR 33-016-181 **New York University** **2818**
 Experimental investigation of turbulent boundary layer
Period *Obligations*
 03/08/72-09/01/72 FY73: TOTAL: \$15,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Zakkay, V. LARC/ 41-Aero Engr
 LARC/Bertram, M.
 (23-760 136-13-01)

NGR 33-016-193 **New York University** **2819**
 Convective cooling forces
Period *Obligations*
 08/01/72-10/01/72 FY73: \$25,100 TOTAL: \$25,100
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Ferri, A. LARC/Hefner, J. N. 41-Aero Engr
 LARC/Kirkham, F. S.
 (23-702 760-66-01)

NGR 33-016-197 **New York University** **2820**
 Scale model wind tunnel study of dispersion of pollutants in the Cleveland area
Period *Obligations*
 03/15/73-03/14/74 FY73: \$40,000 TOTAL: \$40,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Hoydysh, W. G. LERC/Neustadter, H. E. 39-Env Sci, NEC
 LERC/Fordyce, J. S.
 (22-702 770-18-01)

NGR 33-016-201 **New York University** **2821**
 Study of transonic overyawed wings
Period *Obligations*
 05/29/73-08/31/74 FY73: \$50,000 TOTAL: \$50,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Garabedian, P. R. ARC/Hicks, R. M. 41-Aero Engr
 (21-702 760-64-01)

NGT 33-016-014 **New York University** **2822**
 Training of graduate students in space-related science and technology
Period *Obligations*
 03/28/63-08/01/72 FY73: TOTAL: \$1,108,094
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Ragazzini, J. R. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NGL 33-006-020 **Polytechnic Institute of Brooklyn** **2823**
 Digital communications techniques
Period *Obligations*
 09/16/70-09/01/72 FY73: TOTAL: \$365,296
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Pickholtz, R. L. GSFC/Brown, J. P. 45-Elec Engr
 (25-750 125-00-00) (51-750 125-00-00) (51-620 164-06-53)

NGR 33-006-047 **Polytechnic Institute of Brooklyn** **2824**
 Investigation of diffraction by planetary atmospheres
Period *Obligations*
 03/25/68-03/31/74 FY73: \$30,000 TOTAL: \$139,509
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gross, A. H. HQ-SG/Schmerling, E. R. 31-Atmos Sci
 HQ-SG/Kavanagh, L. D., Jr.
 (10-850 188-36-55) (10-850 188-00-00) (10-850 188-39-52)

NGR 33-006-062 **Polytechnic Institute of Brooklyn** **2825**
 A study of the evolution of Venus atmosphere
Period *Obligations*
 10/01/72-12/31/72 FY73: TOTAL: \$25,915
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gross, S. H. GSFC/Rasool, S. I. 11-Astronomy
 GSFC/Hogan, J. S.
 (51-840 404-02-02)

NGR 33-006-068 **Polytechnic Institute of Brooklyn** **2826**
 Study of escape of gases from comets, planets, and satellites
Period *Obligations*
 12/26/72-12/31/73 FY73: \$26,548 TOTAL: \$26,548
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Gross, S. H. HQ-SL/Fellows, R. F. 31-Atmos Sci
 HQ-SL/Hipsher, H. F.
 (10-840 185-47-81)

NGR 33-006-070 **Polytechnic Institute of Brooklyn** **2827**
 Synthesis of polypeptides sugar phosphates and polynucleotides from intermediates under simulated conditions
Period *Obligations*
 04/26/73-06/14/74 FY73: \$59,828 TOTAL: \$39,828
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Eirich, F. R. HQ-SL/Young, R. S. 12-Chemistry
 (10-840 192-55-61)

NGT 33-006-003 **Polytechnic Institute of Brooklyn** **2828**
 Training of graduate students in space-related science and technology
Period *Obligations*
 04/02/63-08/01/72 FY73: TOTAL: \$1,178,896
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Giordano, A. B. HQ-PY/Carter, C. H. 99-Multi-Discip
 (10-370 181-00-00)

NASR 199 **Pratt Institute** **2829**
 Development of a course of study in space sciences suitable for instruction in the ninth and tenth grades in secondary schools
Period *Obligations*
 11/01/65-11/01/76 FY73: TOTAL: \$7,757
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Heindel, R. H. HQ-FE/ 99-Multi-Discip
 (10-030 010-00-00)

NAS 8-26146 **Rensselaer Polytechnic Institute** **2830**
 Growth of single crystals by vapor transport in zero gravity environment
Period *Obligations*
 06/04/70-07/05/74 FY73: \$35,000 TOTAL: \$120,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
 Wiedemeier, H. T. MSFC/Davidson, M. C. 13-Physics
 MSFC/Arnett, G. M.
 (62-980 975-90-95) (62-740 129-03-26) (62-740 114-03-04)

**NASA'S UNIVERSITY PROGRAM
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NAS 8-28307 Rensselaer Polytechnic Institute 2831
Vapor growth of II-VI components

Period	Obligations	
10/11/72-04/30/74	FY73: \$30,000	TOTAL: \$30,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Wiedemeier, H.	MSFC/Adams, W. R.	19-Phys Sci, NEC
	MSFC/Davidson, M. C.	

(62-960 948-90-95)

NGL 33-018-003 Rensselaer Polytechnic Institute 2832
Interdisciplinary materials research including fundamental physics & chemistry of materials, environmental effects, and related problems

Period	Obligations	
09/01/70-04/30/76	FY73: \$201,200	TOTAL: \$3,809,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Wiberly, S. E.	LERC/Lad, R. A.	47-Materials Engr
(22-704 502-01-04)	(22-704 503-10-03)	(10-740 129-00-00)

NGL 33-018-007 Rensselaer Polytechnic Institute 2833
Investigation of composition & chemical behavior of atmosphere of Venus

Period	Obligations	
06/19/62-08/31/75	FY73: \$100,000	TOTAL: \$1,087,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Harteck, P.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-82)	(10-840 185-00-00)	

NGL 33-018-017 Rensselaer Polytechnic Institute 2834
Spatial nucleation and crystal growth

Period	Obligations	
06/23/64-12/31/73	FY73: \$20,000	TOTAL: \$370,272
Prin. Invest.	NASA Tech. Officer	CASE Category
Hudson, J. B.	HQ-SG/Dubin, M.	11-Astronomy
	GSFC/Donn, B.	
(10-850 188-45-53)	(10-850 188-00-00)	(51-850 188-00-00)

NGL 33-018-091 Rensselaer Polytechnic Institute 2835
Analysis and design of a capsule landing system and surface vehicle control system for Mars exploration

Period	Obligations	
06/14/67-05/01/74	FY73: \$105,000	TOTAL: \$585,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Yerazunis, S. W.	HQ-SL/Tarver, P.	49-Engr, NEC
	HQ-SL/Herman, D. H.	
(10-840 186-68-55)		

NGR 33-018-148 Rensselaer Polytechnic Institute 2836
Photochemical investigations of the atmosphere of other planets

Period	Obligations	
08/27/70-08/31/73	FY73: \$32,000	TOTAL: \$82,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ferris, J. P.	HQ-SL/Young, R. S.	12-Chemistry
(10-840 192-55-61)		

NGR 33-018-152 Rensselaer Polytechnic Institute 2837
Mechanics of high energy brakes

Period	Obligations	
06/29/70-06/14/74	FY73: \$108,200	TOTAL: \$207,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Ling, F. F.	LERC/Miller, C. D.	47-Materials Engr
	LERC/Weiss, S.	
(22-704 501-38-12)		

NGR 33-018-183 Rensselaer Polytechnic Institute 2838
Digital adaptive flight controller development

Period	Obligations	
09/15/72-09/01/73	FY73: \$35,300	TOTAL: \$35,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Kaufman, H.	LARC/Elliott, J. R.	41-Aero Engr
	LARC/Bird, J. D.	
(23-702 766-75-02)		

NGR 33-018-188 Rensselaer Polytechnic Institute 2839
Design & analysis of communication subsystem for planetary entry missions

Period	Obligations	
04/26/73-05/31/74	FY73: \$17,000	TOTAL: \$17,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Modestino, J. W.	ARC/Grant, T. L.	31-Atmos Sci
(21-840 186-68-60)		

NGT 33-018-010 Rensselaer Polytechnic Institute 2840
Training of graduate students in space-related science and technology

Period	Obligations	
04/19/62-08/01/72	FY73:	TOTAL: \$1,333,959
Prin. Invest.	NASA Tech. Officer	CASE Category
Wiberley, S. E.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NAS 8-28264 State Univ of New York - Buffalo 2841
Development of guidelines for relevant information contents in data classes

Period	Obligations	
01/27/72-04/30/73	FY73:	TOTAL: \$22,477
Prin. Invest.	NASA Tech. Officer	CASE Category
Schmitt, E.	MSFC/Weber, F. H.	45-Elec Engr
(62-910 933-50-00)		

NAS 8-29745 State Univ of New York - Buffalo 2842
Electrophoretic separation of cells in space

Period	Obligations	
05/15/73-05/15/74	FY73: \$49,995	TOTAL: \$49,995
Prin. Invest.	NASA Tech. Officer	CASE Category
Bigazzi, P. E.	MSFC/Allen, R. E.	13-Physics
	MSFC/Krupnick, A. C.	
(62-980 975-90-95)		

NGL 33-183-012 State Univ of New York - Buffalo 2843
Radar studies of bird migration

Period	Obligations	
08/01/70-07/01/73	FY73: \$13,026	TOTAL: \$13,026
Prin. Invest.	NASA Tech. Officer	CASE Category
Williams, T. C.	WS/Vaughn, C. R.	51-Biology
(53-680 160-75-27)		

NGR 33-015-002 State Univ of New York - Buffalo 2844
Studies in cellular theory and molecular mechanisms

Period	Obligations	
07/30/63-09/30/73	FY73: \$120,000	TOTAL: \$622,237
Prin. Invest.	NASA Tech. Officer	CASE Category
Danielli, J. F.	HQ-SL/Young, R. S.	12-Chemistry
(10-840 192-55-61)		

**NASA'S UNIVERSITY PROGRAM
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NGR 33-015-016 State Univ of New York - Buffalo 2845
Multidisciplinary research in theoretical biology

Period	Obligations	
01/03/66-12/31/71	FY73:	TOTAL: \$500,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Danielli, J. F.	HQ-ER/	51-Biology
(10-870 189-00-00)		

NGR 33-015-108 State Univ of New York - Buffalo 2846
Planetary curriculum and related geologic research

Period	Obligations	
06/02/70-05/14/74	FY73: \$24,433	TOTAL: \$111,470
Prin. Invest.	NASA Tech. Officer	CASE Category
King, J. S.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	
(10-840 185-50-81)	(10-840 384-50-80)	

NGR 33-183-003 State Univ of New York - Buffalo 2847
Bird migration from Cape Cod to the West Indies a radar study

Period	Obligations	
09/08/70-11/30/73	FY73:	TOTAL: \$12,669
Prin. Invest.	NASA Tech. Officer	CASE Category
Williams, T. C.	HQ-ER/Jacobs, R. G.	51-Biology
(53-870 189-57-62)	(10-870 189-57-62)	

NGR 33-183-004 State Univ of New York - Buffalo 2848
Lunar sample analysis

Period	Obligations	
02/12/71-06/30/73	FY73:	TOTAL: \$33,676
Prin. Invest.	NASA Tech. Officer	CASE Category
Cadenhead, D. A.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NAS 1-10493 State Univ of New York - Stony Brook 2849
Participation in the science planning for the Viking 1975 missions in the area of molecular analysis

Period	Obligations	
01/18/71-03/31/77	FY73: \$33,534	TOTAL: \$69,638
Prin. Invest.	NASA Tech. Officer	CASE Category
Owens, T.	LARC/Soffen, G. A.	13-Physics
(23-840 815-20-00)		

NAS 9-11640 State Univ of New York - Stony Brook 2850
Ultraviolet photography of earth and moon

Period	Obligations	
05/03/71-06/30/73	FY73:	TOTAL: \$26,405
Prin. Invest.	NASA Tech. Officer	CASE Category
Owen, T.	JSC/Hardee, S. N.	39-Env Sci, NEC
(72-910 914-49-00)		

NGL 33-015-035 State Univ of New York - Stony Brook 2851
Investigation of thermodynamic properties of interstitial elements in refractory metals

Period	Obligations	
06/17/66-05/01/73	FY73:	TOTAL: \$131,885
Prin. Invest.	NASA Tech. Officer	CASE Category
Seigle, L. L.	LERC/Lad, R. A.	47-Materials Engr
(10-740 129-00-00)	(22-740 129-00-00)	

NGL 33-015-036 State Univ of New York - Stony Brook 2852
Research in infrared astronomy

Period	Obligations	
01/02/67-01/01/73	FY73:	TOTAL: \$149,862
Prin. Invest.	NASA Tech. Officer	CASE Category
Kao, Y. H.	HQ-PY/	11-Astronomy
(10-370 183-00-00)	(51-370 183-00-00)	(51-850 188-00-00)

NGL 33-015-066 State Univ of New York - Stony Brook 2853
Theoretical investigation of radio waves propagation in interplanetary space

Period	Obligations	
10/27/67-09/01/72	FY73:	TOTAL: \$40,256
Prin. Invest.	NASA Tech. Officer	CASE Category
Tuan, H. S.	GSFC/Hughes, W. E.	19-Phys Sci, NEC
(51-750 125-00-00)	(25-750 125-00-00)	

NGL 33-015-082 State Univ of New York - Stony Brook 2854
Study of high energy and relativistic astrophysics

Period	Obligations	
10/16/69-03/01/74	FY73: \$19,940	TOTAL: \$179,940
Prin. Invest.	NASA Tech. Officer	CASE Category
Owen, T.	GSFC/Stothers, R.	11-Astronomy
	GSFC/Thaddeus, P.	
(51-850 405-02-02)		

NGL 33-015-130 State Univ of New York - Stony Brook 2855
Lunar sample analysis

Period	Obligations	
02/11/71-01/31/76	FY73: \$103,100	TOTAL: \$397,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Papike, J.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGL 33-015-174 State Univ of New York - Stony Brook 2856
Lunar sample analysis

Period	Obligations	
02/01/73-01/31/76	FY73: \$150,000	TOTAL: \$150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Schaeffer, O. A.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 33-015-068 State Univ of New York - Stony Brook 2857
Techniques for interferometrically controlled ruling of improved large diffraction gratings

Period	Obligations	
12/07/67-06/30/73	FY73:	TOTAL: \$509,227
Prin. Invest.	NASA Tech. Officer	CASE Category
Stroke, G. W.	HQ-SG/Weldon, J. M.	13-Physics
	GSFC/Mangus, J. D.	
(10-850 188-38-51)	(10-850 188-00-00)	

NGR 33-015-133 State Univ of New York - Stony Brook 2858
Lunar sample analysis

Period	Obligations	
02/11/71-01/31/73	FY73:	TOTAL: \$137,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Funkhouser, J.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NASA'S UNIVERSITY PROGRAM **NEW YORK (Continued)**

NGR 33-015-139 State Univ of New York - Stony Brook 2859
 Quantitative spectroscopic measurements on the principal constituents in planetary atmospheres

Period	Obligations	
04/12/71-05/31/75	FY73: TOTAL: \$106,038	
Prin. Invest.	NASA Tech. Officer	CASE Category
Varanasi, P.	HQ-SL/Fellows, R. F.	31-Atmos Sci

(10-840 185-47-83)

NGR 33-015-140 State Univ of New York - Stony Brook 2860
 Infrared spectroscopy of astronomical objects with a Fourier transform spectrometer at high altitudes

Period	Obligations	
06/07/71-02/14/74	FY73: \$8,000 TOTAL: \$33,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gebel, W.	ARC/Mason, R. H.	11-Astronomy
Hilgeman, T.	ARC/Cameron, R. M.	

(21-850 352-02-01) (10-850 352-02-01)

NGR 33-015-141 State Univ of New York - Stony Brook 2861
 Spectroscopic observations of the planets

Period	Obligations	
01/26/71-12/29/74	FY73: \$28,139 TOTAL: \$85,339	
Prin. Invest.	NASA Tech. Officer	CASE Category
Owen, T.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	

(10-840 196-41-80)

NGR 33-015-149 State Univ of New York - Stony Brook 2862
 Definition phase of the Grand Tour missions imaging investigations for outer planet missions

Period	Obligations	
04/20/71-06/30/72	FY73: TOTAL: \$4,152	
Prin. Invest.	NASA Tech. Officer	CASE Category
Owen, T.	HQ-SL/Mitz, M. A.	11-Astronomy
	HQ-SL/Keller, J. W.	

(10-840 186-68-52)

NGR 33-015-154 State Univ of New York - Stony Brook 2863
 Lunar sample analysis

Period	Obligations	
10/31/71-01/31/74	FY73: \$30,000 TOTAL: \$92,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Carter, N. L.	JSC/Harris, J. W.	13-Physics

(72-910 914-40-00)

NGR 33-015-160 State Univ of New York - Stony Brook 2864
 Thermodynamics and kinetics of reactions in protective coating systems

Period	Obligations	
04/12/72-06/01/73	FY73: \$35,862 TOTAL: \$70,940	
Prin. Invest.	NASA Tech. Officer	CASE Category
Seigle, L. L.	LERC/Levine, S. R.	47-Materials Engr

(22-704 501-01-06)

NGR 33-015-163 State Univ of New York - Stony Brook 2865
 Research on atmospheric pollution effects of turbine engine products over range of operating altitudes

Period	Obligations	
05/22/72-05/01/75	FY73: TOTAL: \$48,544	
Prin. Invest.	NASA Tech. Officer	CASE Category
Berlad, A. L.	LERC/Belles, F. E.	39-Env Sci, NEC
	LERC/Gordon, S.	

(22-762 132-15-06)

NGR 33-015-166 State Univ of New York - Stony Brook 2866
 Solicited proposal for new grant

Period	Obligations	
03/01/73-02/28/74	FY73: \$9,000 TOTAL: \$9,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Gebel, W.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M.	

(21-850 352-02-03)

NGR 33-015-169 State Univ of New York - Stony Brook 2867
 Organic molecules in the atmosphere of Jupiter; investigation of colors in Jovian cloud deck

Period	Obligations	
10/16/72-08/01/73	FY73: \$19,986 TOTAL: \$19,986	
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-SL/	31-Atmos Sci

(10-840 192-55-61)

NAS 9-11846 State Univ of New York - Upstate Med Ctr 2868
 Analyses of urine samples for antidiuretic hormone

Period	Obligations	
06/10/71-08/31/74	FY73: \$19,000 TOTAL: \$49,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Miller, M.	JSC/Leach, C. S.	59-Life Sci, NEC

(72-970 970-51-16) (72-960 961-51-00) (72-910 914-50-00)

NAS 9-12770 State Univ of New York Col - Geneseo 2869
 Principal investigator support of the lunar geology eastern Maria data analysis experiment

Period	Obligations	
06/20/72-07/01/75	FY73: TOTAL: \$46,646	
Prin. Invest.	NASA Tech. Officer	CASE Category
Young, R. A.	JSC/Hardee, S. N.	32-Geological Sci

(72-910 914-49-00)

NGR 33-219-002 State Univ of New York Col - Geneseo 2870
 Comparison of lyman 2 and he 1 & 10830 line structures and variations in early type star atmosphere

Period	Obligations	
05/14/73-05/31/74	FY73: \$1,700 TOTAL: \$1,700	
Prin. Invest.	NASA Tech. Officer	CASE Category
Meisel, D. D.	HQ-SG/Kelsall, T.	11-Astronomy
	HQ-SG/Roman, N. G.	

(10-850 188-41-55)

NGL 33-022-082 Syracuse University 2871
 Noise generation from interacting high speed axisymmetric jet flows

Period	Obligations	
05/09/68-08/01/72	FY73: TOTAL: \$137,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Dosanjh, D.	LARC/Mayes, W.	13-Physics

(23-760 126-00-00)

NGL 33-022-090 Syracuse University 2872
 Multidisciplinary studies in management and development programs in the public sector

Period	Obligations	
02/05/68-12/31/73	FY73: TOTAL: \$1,070,500	
Prin. Invest.	NASA Tech. Officer	CASE Category
Barzelay, M. E.	HQ-PY/Morris, J. D.	79-Soc Sci, NEC
	HQ-ER/Lehmann, J.	

(10-370 183-00-00) (10-680 160-00-00) (10-680 160-88-50)

NASA'S UNIVERSITY PROGRAM **NEW YORK (Continued)**

NGL 33-022-108 **Syracuse University** **2873**
Investigation of the effect of metallurgical structure and properties on the adhesion and friction behavior of cobalt alloys

Period	Obligations	
04/17/69-05/01/73	FY73:	TOTAL: \$103,760
Prin. Invest.	NASA Tech. Officer	CASE Category
Keller, D. V.	LERC/Johnson, R. L.	47-Materials Engr
	LERC/Buckley, D. H.	
(22-740 129-00-00)	(22-740 129-03-24)	

NGR 33-022-125 **Syracuse University** **2874**
Computer enhancement through interpretive techniques

Period	Obligations	
06/18/70-10/01/71	FY73:	TOTAL: \$28,909
Prin. Invest.	NASA Tech. Officer	CASE Category
Foster, G. H.	GSFC/Creveling, C. J.	21-Mathematics
(51-500 311-00-00)	(51-680 160-00-00)	

NGR 33-022-139 **Syracuse University** **2875**
Interdisciplinary study of management in the manned space flight program

Period	Obligations	
11/04/71-12/31/72	FY73:	TOTAL: \$55,370
Prin. Invest.	NASA Tech. Officer	CASE Category
Drucker, E. E.	HQ-MR/Langford, J.	75-Political Sci
(10-910 980-80-00)		

NGR 33-022-150 **Syracuse University** **2876**
Interfacing user to large data base system

Period	Obligations	
09/18/72-09/01/73	FY73: \$37,166	TOTAL: \$37,166
Prin. Invest.	NASA Tech. Officer	CASE Category
Foster, G. H.	GSFC/Pease, P. B.	21-Mathematics
	GSFC/Pritchard, J. A.	
(51-500 150-22-36)		

NGT 33-022-005 **Syracuse University** **2877**
Training of graduate students in space-related science and technology

Period	Obligations	
04/08/63-08/01/72	FY73:	TOTAL: \$694,164
Prin. Invest.	NASA Tech. Officer	CASE Category
Hough, W. H.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGT 33-022-097 **Syracuse University** **2878**
Training of predoctoral graduate students in administration and management with emphasis on policy development, management, and administration of large scientific & technological programs

Period	Obligations	
09/01/68-08/01/73	FY73:	TOTAL: \$201,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Honey, J. C.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NAS 1-9689 **University of Rochester** **2879**
Participation in the science planning for biology

Period	Obligations	
06/11/70-03/31/77	FY73: \$64,320	TOTAL: \$150,237
Prin. Invest.	NASA Tech. Officer	CASE Category
Vishniac, W.	LARC/Soffen, G. A.	51-Biology
(23-840 815-20-00)		

NGL 33-019-003 **University of Rochester** **2880**
Methods of designing multilayer filters having specified transmission or reflection as a function of wave length

Period	Obligations	
08/24/62-05/01/73	FY73:	TOTAL: \$251,318
Prin. Invest.	NASA Tech. Officer	CASE Category
Baumeister, P. W.	HQ-SG/Ott, E. J.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-00-00)	(10-850 831-00-00)	(10-850 188-41-58)

NGR 33-019-002 **University of Rochester** **2881**
Research on automatic remote direction bacteria including modification of detection device for chemical analysis of lunar & planetary surface materials

Period	Obligations	
12/19/61-06/30/73	FY73: \$25,000	TOTAL: \$1,016,342
Prin. Invest.	NASA Tech. Officer	CASE Category
Vishniac, W. V.	HQ-SL/Young, R. S.	51-Biology
(10-840 192-55-63)		

NGR 33-019-126 **University of Rochester** **2882**
Radiative damping of waves in solar atmospheres

Period	Obligations	
04/07/72-12/31/73	FY73:	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, A.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	
(10-850 188-38-53)		

NGR 33-019-127 **University of Rochester** **2883**
50 microns 100 microns observations of strong sources with a lamellar grating interferometer on the C-141 infrared telescope

Period	Obligations	
03/06/73-02/28/74	FY73: \$20,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Pipher, J. L.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M., Jr.	
(21-850 352-02-03)		

NORTH CAROLINA

NAS 8-29286 **Appalachian State University** **2884**
Statistical studies of atmospheric variable related to Skylab and space shuttle programs

Period	Obligations	
10/06/72-10/01/73	FY73: \$14,962	TOTAL: \$14,962
Prin. Invest.	NASA Tech. Officer	CASE Category
Carter, M. C.	MSFC/Falls, L. W.	21-Mathematics
	MSFC/Smith, O. E.	
(62-704 502-21-30)		

NAS 2-7655 **Duke University** **2885**
Brain and scalp sections of mice

Period	Obligations	
06/20/73-06/19/74	FY73: \$21,500	TOTAL: \$21,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Vogel, F. S.	ARC/Harmaker, W. E.	53-Other Medical
(21-970 970-21-63)		

NASA'S UNIVERSITY PROGRAM **NORTH CAROLINA (Continued)**

NAS 9-11994 Duke University 2886
Effects of atmospheric pressure
Period *Obligations*
06/29/71-03/14/73 FY73: TOTAL: \$30,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Walbaisht, M. L. JSC/Fitch, R. C. 53-Other Medical
(72-910 914-50-00)

NGL 34-001-001 Duke University 2887
Research on satellite electrical power conversion systems and circuit protection
Period *Obligations*
02/19/65-02/29/76 FY73: \$70,000 TOTAL: \$736,031
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wilson, T. G. GSFC/Rodriguez, G. E. 45-Elec Engr
GSFC/Pascuitti, E. R.
(51-704 502-25-72)

NGR 34-001-041 Duke University 2888
Satellite power conversion system
Period *Obligations*
02/01/72-05/31/74 FY73: \$9,126 TOTAL: \$14,126
Prin. Invest. *NASA Tech. Officer* *CASE Category*
O'Foghluha, F. GSFC/Trombka, I. J. 13-Physics
(51-910 914-49-00)

NGT 34-001-003 Duke University 2889
Training of graduate students in space-related science and technology
Period *Obligations*
03/21/63-08/01/72 FY73: TOTAL: \$759,298
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Harmon, F. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NSR 34-001-025 Duke University 2890
Design and production of supplementary materials for teachers of high school mathematics
Period *Obligations*
05/15/67-12/01/71 FY73: TOTAL: \$45,629
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Reynolds, T. D. HQ-FE/Ahrendt, M. H. 13-Physics
(10-030 023-00-00)

NGR 34-012-003 North Carolina A&T State University 2891
Applications of scattering theory to spectral line satellites
Period *Obligations*
08/14/70-08/31/74 FY73: \$11,620 TOTAL: \$56,130
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Madan, R. N. HQ-PY/Pohly, J. G. 45-Elec Engr
GSFC/Temkin, A.
(10-371 340-00-00) (10-370 183-00-00)

NGR 34-012-004 North Carolina A&T State University 2892
Microelectronic components and metallic oxide studies and applications
Period *Obligations*
04/17/70-08/31/73 FY73: TOTAL: \$90,120
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Williams, L. HQ-PY/Pohly, J. G. 45-Elec Engr
LARC/Fripp, A. L.
(10-371 340-00-00) (10-370 183-00-00)

NAS 1-9603 North Carolina State University 2893
A study for development of new techniques for the quantitative determination of the flying qualities of light aircraft
Period *Obligations*
11/06/69-10/18/72 FY73: TOTAL: \$97,132
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Smetana, F. O. LARC/McLaughlin, M. D. 41-Aero Engr
LARC/Crane, H. L.
(23-760 736-00-00) (23-760 736-08-10) (23-702 760-71-02)

NAS 1-10277 North Carolina State University 2894
Development of a computer program to calculate the surface stream lines and heat transfer on shuttle type configurations
Period *Obligations*
08/19/70-09/20/72 FY73: TOTAL: \$31,341
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Dejarnette, F. R. LARC/Hamilton, H. H. 41-Aero Engr
(23-742 124-07-24)

NAS 2-6684 North Carolina State University 2895
Utilization of materials in bioastronautic studies
Period *Obligations*
12/17/71-04/21/73 FY73: TOTAL: \$13,964
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Grosch, D. S. ARC/Dunlap, W. A. 51-Biology
(21-970 970-21-63)

NAS 5-21732 North Carolina State University 2896
Utilization of ERTS-A data in geological evaluation, regional planning forest management and water management in North Carolina
Period *Obligations*
05/02/72-07/01/74 FY73: TOTAL: \$18,028
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Welby, C. W. GSFC/Ensor, G. J. 32-Geological Sci
Lammi, J. O.
Carson, R. J., III
(51-680 641-14-00)

NAS 9-9522 North Carolina State University 2897
Research study in support of solar neutron monitor
Period *Obligations*
05/26/69-09/15/72 FY73: TOTAL: \$54,287
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldstein, J. I. JSC/Golden, R. L. 13-Physics
(72-910 914-40-00) (72-850 188-00-00)

NAS 9-13321 North Carolina State University 2898
Geological evaluation, regional planning, forest management and water management in North Carolina
Period *Obligations*
03/08/73-06/30/74 FY73: \$4,000 TOTAL: \$4,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Welby, C. JSC/Hicks, R. D. 39-Env Sci, NEC
Carson, R. J.
Lammi, J. O.
(62-960 948-63-83)

NASA'S UNIVERSITY PROGRAM
NORTH CAROLINA (Continued)

NGL 34-002-017 North Carolina State University 2899
 Transverse instabilities of magnetically self-focusing streams in plasmas

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
12/03/64-11/01/75		TOTAL: \$156,871
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bennett, W. H.	HQ-NS/Thom, K.	13-Physics
(10-720 112-02-22)	(10-740 129-02-22)	(45-720 112-02-22)

NGL 34-002-032 North Carolina State University 2900
 Mathematical theory of optimal control

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
10/13/65-03/01/74		TOTAL: \$137,460
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sagan, H.	LARC/Armstrong, E. S.	21-Mathematics
	LARC/Bird, J. D.	
(23-750 125-00-00)	(23-750 125-19-08)	

NGL 34-002-042 North Carolina State University 2901
 Photometry of vapor clouds released above the earth

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
05/31/66-08/01/71		TOTAL: \$252,943
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Manring, E. R.	HQ-SG/Dubin, M.	11-Astronomy
	HQ-SG/Miller, R.	
(10-850 188-00-00)	(10-850 874-11-00)	(10-850 874-00-00)

NGL 34-002-055 North Carolina State University 2902
 Study of human factors aspects of noise

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
05/11/67-06/01/73		TOTAL: \$180,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Pearson, R. G.	LARC/Cawthorn, J. M.	49-Engr, NEC
	LARC/Edge, P. M.	
(23-770 127-00-00)	(23-770 127-49-25)	

NGL 34-002-084 North Carolina State University 2903
 A theoretical study of the process and initiation of spallation of a plate subjected to hypervelocity impact

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
10/22/68-09/01/72		TOTAL: \$66,674
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chang, T. S.	LARC/Thomson, R. G.	41-Aero Engr
(23-742 124-00-00)		

NGL 34-002-095 North Carolina State University 2904
 Acoustic energy effects on sleep and human performance

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
04/11/69-08/31/74	\$10,000	TOTAL: \$251,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Levere, T. E.	LARC/Cawthorn, J. M.	61-Biol Aspects
	LARC/Edge, P. M., Jr.	
(23-704 501-09-02)	(23-770 127-49-25)	(23-770 137-09-02)

NGL 34-002-098 North Carolina State University 2905
 Ion implantation of gallium arsenide and gallium indium as compound semiconductors

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
09/11/69-08/01/72		TOTAL: \$57,715
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Monteith, L. K.	LARC/Hendricks, H. D.	13-Physics
	LARC/Miller, W. E.	
(23-750 125-00-00)		

NGR 34-002-108 North Carolina State University 2906
 Development of high-temperature materials for solid propellant rocket nozzle applications

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
06/09/69-06/30/73		TOTAL: \$75,765
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Manning, C. R.	LARC/Buckley, J. D.	47-Materials Engr
(23-830 180-00-00)	(23-830 180-32-51)	

NGR 34-002-115 North Carolina State University 2907
 Analysis of molecular gas lasers in flow

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
09/15/69-08/31/72		TOTAL: \$62,992
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hassan, H. A.	LARC/Hess, R. V.	19-Phys Sci, NEC
	LARC/Allario, F.	
(23-740 129-01-22)	(23-740 129-00-00)	

NGR 34-002-172 North Carolina State University 2908
 Ion implanted infrared sensor arrays

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
08/18/71-03/31/74	\$37,470	TOTAL: \$73,411
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Monteith, L. K.	LARC/Hendricks, H. D.	45-Elec Engr
	LARC/Hutchby, J. A.	
(23-704 502-03-53)		

NGR 34-002-175 North Carolina State University 2909
 Effect of hydrogen on mechanical properties of alloys containing a martensite phase

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
12/01/71-12/31/73	\$24,649	TOTAL: \$47,653
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Benson, R. B.	ARC/Williams, D. P.	47-Materials Engr
(21-704 501-21-21)		

NGR 34-002-177 North Carolina State University 2910
 Analysis of nuclear induced plasmas by means of kinetic theory

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
03/06/72-06/30/73		TOTAL: \$30,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hassan, H.	HQ-NS/Thom, K.	13-Physics
	LERC/Ragsdale, R. G.	
(45-720 112-02-22)		

NGR 34-002-179 North Carolina State University 2911
 Review and analysis of lift & drag estimation for use in light aircraft performance prediction

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
08/03/72-08/01/73	\$33,846	TOTAL: \$33,846
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smetana, F. O.	LARC/Crane, H. L.	41-Aero Engr
	LARC/Stickle, J. W.	
(23-702 760-60-01)		

NGR 34-002-180 North Carolina State University 2912
 Thermal fatigue in fiber composite materials

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>
08/01/72-07/31/74	\$16,621	TOTAL: \$16,621
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fahmy, A. A.	LARC/Imig, L. A.	41-Aero Engr
	LARC/Roderick, G. L.	
(23-704 501-22-02)		

NASA'S UNIVERSITY PROGRAM **NORTH CAROLINA (Continued)**

NGR 34-002-184 North Carolina State University 2913
Modification and generalization of earth energy

Period	Obligations	
05/25/72-05/31/73	FY73: \$3,108	TOTAL: \$15,292
Prin. Invest.	NASA Tech. Officer	CASE Category
Moore, C. J.	LARC/Turner, R. E.	21-Mathematics
	LARC/Sullivan, E. M.	

(23-680 160-44-63)

NGR 34-002-188 North Carolina State University 2914
Multiple shaped-beam antenna study

Period	Obligations	
09/01/72-06/01/73	FY73: \$17,845	TOTAL: \$17,845
Prin. Invest.	NASA Tech. Officer	CASE Category
Kauffman, J. F.	LARC/Croswell, W. F.	45-Elec Engr
	LARC/Bailey, M. C.	

(23-620 636-18-71) (23-680 160-20-54)

NGR 34-002-193 North Carolina State University 2915
Surface fitting three-dimensional bodies

Period	Obligations	
05/07/73-04/30/74	FY73: \$11,980	TOTAL: \$11,980
Prin. Invest.	NASA Tech. Officer	CASE Category
Dejaarnette, F. R.	LARC/Hamilton, H. H., II	41-Aero Engr

(23-704 502-37-01)

NGR 34-002-195 North Carolina State University 2916
Theoretical analysis of current voltage characteristics of solar cells

Period	Obligations	
06/01/73-06/30/74	FY73: \$26,500	TOTAL: \$26,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Hauser, J. R.	LERC/Godlewski, M. P.	45-Elec Engr

(22-704 502-05-50)

NGT 34-002-097 North Carolina State University 2917
Training of graduate students in acoustics as related to aeronautical and space technology

Period	Obligations	
04/11/69-08/01/73	FY73:	TOTAL: \$251,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Hart, F.	HQ-PY/Carter, C. H.	49-Engr, NEC

(10-370 181-00-00)

NAS 8-20106 University of North Carolina - Chapel Hill 2918
Research study to develop methods for solving problems associated with space vehicles

Period	Obligations	
04/01/65-10/01/75	FY73:	TOTAL: \$5,465
Prin. Invest.	NASA Tech. Officer	CASE Category
	MSFC/	42-Astro Engr

(62-910 931-50-00)

NAS 8-26601 University of North Carolina - Chapel Hill 2919
Passive particle dosimetry

Period	Obligations	
11/17/70-08/31/73	FY73:	TOTAL: \$29,792
Prin. Invest.	NASA Tech. Officer	CASE Category
Childs, C. B.	MSFC/Parnell, T. A.	13-Physics
	MSFC/Oran, W.	

(62-740 114-03-05) (62-742 124-09-21)

NGL 34-003-040 University of North Carolina - Chapel Hill 2920
A study in interdisciplinary communication

Period	Obligations	
10/17/68-05/01/73	FY73:	TOTAL: \$523,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Faust, R. G.	HQ-PY/Quinn, H. B.	75-Political Sci

(10-370 183-00-00)

NGL 34-003-041 University of North Carolina - Chapel Hill 2921
Gravity discrimination

Period	Obligations	
08/15/69-08/01/73	FY73:	TOTAL: \$159,825
Prin. Invest.	NASA Tech. Officer	CASE Category
Clark, F. C.	ARC/	13-Physics
(10-870 189-00-00)	(21-870 189-52-62)	(10-870 189-52-62)

NGR 34-003-048 University of North Carolina - Chapel Hill 2922
Lunar sample analysis

Period	Obligations	
06/19/71-11/01/72	FY73:	TOTAL: \$13,845
Prin. Invest.	NASA Tech. Officer	CASE Category
Isenhour, T. L.	JSC/Harris, J. W.	12-Chemistry

(72-910 914-40-00)

NGT 34-003-001 University of North Carolina - Chapel Hill 2923
Training of graduate students in space-related science and technology

Period	Obligations	
03/20/63-08/01/72	FY73:	TOTAL: \$812,804
Prin. Invest.	NASA Tech. Officer	CASE Category
Ingram, J. C.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NAS 9-11690 Wake Forest University 2924
Study of cellular control of microcirculatory system

Period	Obligations	
04/20/71-03/31/73	FY73:	TOTAL: \$24,217
Prin. Invest.	NASA Tech. Officer	CASE Category
Hutchins, P. M.	JSC/Alexander, W. C.	52-Clinical Med
	JSC/Leach, C. S.	

(72-870 189-54-06)

NORTH DAKOTA

NGR 35-001-012 North Dakota State University 2925
Quantitation of buried contamination by the use of solvents

Period	Obligations	
06/01/73-05/31/74	FY73: \$22,729	TOTAL: \$38,689
Prin. Invest.	NASA Tech. Officer	CASE Category
Hill, T. W.	HQ-SL/Hall, L. B.	12-Chemistry
	HQ-SL/Gallagher, S. B.	

(10-840 193-58-62) (10-870 189-00-00) (10-870 191-00-00)

NGT 35-001-001 North Dakota State University 2926
Training of predoctoral graduate students in space-related sciences & technology

Period	Obligations	
03/16/64-08/01/72	FY73:	TOTAL: \$171,350
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, G. S.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NASA'S UNIVERSITY PROGRAM

OHIO

NAS 2-6067 **Bowling Green State University** **2927**
Study genetic material in space

Period	Obligations	
07/29/70-06/30/73	FY73: \$41,520	TOTAL: \$124,006
Prin. Invest.	NASA Tech. Officer	CASE Category
Oster, I. I.	ARC/Miquel, J.	51-Biology
	ARC/Tremor, J. W.	
(21-870 883-9X-00)	(21-970 970-21-35)	(21-970 970-21-61)

NAS 8-29707 **Case Western Reserve University** **2928**
Study of high energy extragalactic sources

Period	Obligations	
04/13/73-10/12/73	FY73: \$3,500	TOTAL: \$3,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Bidelman, W.	MSFC/Wdowial, T. A.	11-Astronomy
	MSFC/Miller, E. R.	
(62-850 188-41-51)		

NGL 36-003-002 **Case Western Reserve University** **2929**
Research on methods of systematic structural synthesis for digital computing equipment

Period	Obligations	
12/01/61-06/01/74	FY73:	TOTAL: \$657,136
Prin. Invest.	NASA Tech. Officer	CASE Category
Kicher, T. P.	LARC/Stroud, W. J.	41-Aero Engr
Fox, R. L.		
(10-742 124-00-00)	(23-742 124-00-00)	(23-760 126-00-00)

NGL 36-003-064 **Case Western Reserve University** **2930**
Basic scientific research in fluid physics

Period	Obligations	
06/14/65-05/31/75	FY73: \$101,751	TOTAL: \$961,751
Prin. Invest.	NASA Tech. Officer	CASE Category
Reshotko, E.	LERC/Evvard, J. C.	46-Mech Engr
(22-701 599-85-00)	(22-704 501-04-03)	(22-740 129-01-21)

NGL 36-003-094 **Case Western Reserve University** **2931**
The effects of deformation on dispersion

Period	Obligations	
10/18/66-07/01/73	FY73: \$25,080	TOTAL: \$159,015
Prin. Invest.	NASA Tech. Officer	CASE Category
Ebert, L. B.	LERC/Quatinetz, M.	47-Materials Engr
(22-704 501-01-06)	(22-740 129-03-20)	

NGL 36-027-001 **Case Western Reserve University** **2932**
Specific aspects of computer assisted software design

Period	Obligations	
05/22/69-05/01/72	FY73:	TOTAL: \$200,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Glaser, E. L.	GSFC/Ludwig, G.	99-Multi-Discip
(25-750 125-00-00)	(51-750 125-00-00)	

NGL 36-027-032 **Case Western Reserve University** **2933**
Study of the effects of boundary layer control on shock wave turbulent boundary layer interactions in supersonic inlets

Period	Obligations	
05/07/71-04/01/73	FY73:	TOTAL: \$45,070
Prin. Invest.	NASA Tech. Officer	CASE Category
Reshotko, E.	LERC/Anderson, B. H.	41-Aero Engr
Greber, I.		
(22-760 720-03-10)		

NGL 36-027-057 **Case Western Reserve University** **2934**
Lunar sample analysis

Period	Obligations	
06/30/72-01/01/75	FY73: \$68,670	TOTAL: \$116,670
Prin. Invest.	NASA Tech. Officer	CASE Category
Radcliffe, S. V.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 36-003-100 **Case Western Reserve University** **2935**
Diffusive mixing as a tool for studying history of natural glasses

Period	Obligations	
04/10/67-08/31/73	FY73:	TOTAL: \$89,654
Prin. Invest.	NASA Tech. Officer	CASE Category
Cooper, A. R.	GSFC/O'Keefe, J. A.	13-Physics
(51-810 195-00-00)	(51-840 185-00-00)	(51-810 195-42-63)

NGR 36-027-008 **Case Western Reserve University** **2936**
Research on jets in cross flow

Period	Obligations	
02/03/70-08/31/73	FY73: \$34,905	TOTAL: \$114,545
Prin. Invest.	NASA Tech. Officer	CASE Category
Greber, I.	LERC/Holdeman, J. D.	41-Aero Engr
(22-704 501-24-08)		

NGR 36-027-021 **Case Western Reserve University** **2937**
Lunar sample analysis

Period	Obligations	
04/01/71-01/31/73	FY73:	TOTAL: \$112,025
Prin. Invest.	NASA Tech. Officer	CASE Category
Radcliffe, S. V.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 36-027-028 **Case Western Reserve University** **2938**
Lunar sample analysis

Period	Obligations	
06/22/71-04/30/72	FY73: \$6,000	TOTAL: \$38,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Cooper, R. A.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 36-027-035 **Case Western Reserve University** **2939**
Unidirectional solidification of superalloy eutectics to produce composite cast structures

Period	Obligations	
05/21/71-06/30/74	FY73:	TOTAL: \$46,590
Prin. Invest.	NASA Tech. Officer	CASE Category
Wallace, J. F.	LERC/Ashbrook, R. L.	47-Materials Engr
(22-760 126-63-10)		

NGR 36-027-038 **Case Western Reserve University** **2940**
Boundary layer control applied to shock wave boundary layer interactions

Period	Obligations	
06/18/71-12/31/74	FY73:	TOTAL: \$40,920
Prin. Invest.	NASA Tech. Officer	CASE Category
Reshotko, E.	LERC/Anderson, B. H.	41-Aero Engr
(22-760 126-63-10)		

NASA'S UNIVERSITY PROGRAM **OHIO (Continued)**

NGR 36-027-040 Case Western Reserve University 2941
Evaluation of candidate materials for aerospace

Period	Obligations
07/22/71-12/31/73	FY73: \$16,785 TOTAL: \$33,175
Prin. Invest.	NASA Tech. Officer
Troiano, A. R.	LERC/Gray, H. R. 47-Materials Engr
	LERC/Ashbrook, R. L.
(22-740 129-03-28)	

NGR 36-027-047 Case Western Reserve University 2942
Industry instructional television network

Period	Obligations
05/19/72-05/31/73	FY73: TOTAL: \$13,000
Prin. Invest.	NASA Tech. Officer
Boltz, R. E.	ARC/Usher, R. J. 49-Engr, NEC
(22-030 039-00-00)	

NGR 36-027-050 Case Western Reserve University 2943
Catalysts for electrochemical generation of oxygen

Period	Obligations
02/22/72-03/31/74	FY73: TOTAL: \$76,000
Prin. Invest.	NASA Tech. Officer
Yeager, E.	ARC/Quattrone, P. D. 12-Chemistry
(21-970 970-22-20)	(21-970 970-22-30)

NGR 36-027-051 Case Western Reserve University 2944
Stress corrosion cracking & hydrogen embrittlement

Period	Obligations
06/02/72-06/30/75	FY73: TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer
Hehemann, R. H.	LERC/Gray, H. R. 47-Materials Engr
	LERC/Andrews, C. W.
(22-740 134-03-20)	

NGR 36-027-052 Case Western Reserve University 2945
Electrical generation of oxygen

Period	Obligations
04/17/72-08/31/75	FY73: TOTAL: \$45,328
Prin. Invest.	NASA Tech. Officer
Yeager, E.	ARC/Quattrone, P. D. 12-Chemistry
(21-970 970-22-20)	

NGR 36-027-053 Case Western Reserve University 2946
Microelectronic bioinstrumentation systems

Period	Obligations
04/27/72-08/31/73	FY73: \$8,300 TOTAL: \$83,300
Prin. Invest.	NASA Tech. Officer
Ko, W. H.	ARC/Sandler, H. 53-Other Medical
(21-970 970-21-14)	(21-970 970-21-16) (21-970 970-21-25)

NGT 36-003-007 Case Western Reserve University 2947
Training of graduate students in space-related science and technology

Period	Obligations
03/22/63-08/01/72	FY73: TOTAL: \$1,053,983
Prin. Invest.	NASA Tech. Officer
Thomas, R. H.	HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)	

NGT 36-027-011 Case Western Reserve University 2948
Summer program of NASA-ASEE summer faculty fellowships

Period	Obligations
12/16/69-03/31/73	FY73: \$113,300 TOTAL: \$417,495
Prin. Invest.	NASA Tech. Officer
Prahl, J. M.	HQ-PY/Carter, C. H. 49-Engr, NEC
(10-371 340-00-00)	(22-701 598-85-00)

NGR 36-033-001 Central State University - Ohio 2949
Temperature dependence of ultrasonic echo attenuation in tungsten

Period	Obligations
12/04/72-12/31/73	FY73: \$13,900 TOTAL: \$13,900
Prin. Invest.	NASA Tech. Officer
Hartzler, E. A.	HQ-PY/Pohly, J. G. 13-Physics
(10-371 340-00-00)	LERC/Grimes, H. H.

NGR 36-033-002 Central State University - Ohio 2950
Determination of water quality in Lake Erie via satellite scanning spectroscopy

Period	Obligations
02/28/73-02/14/74	FY73: \$15,444 TOTAL: \$15,444
Prin. Invest.	NASA Tech. Officer
Rubin, D.	HQ-PY/Pohly, J. G. 39-Env Sci, NEC
(10-371 340-00-00)	LERC/Raquet, C. A.

NGR 36-033-003 Central State University - Ohio 2951
Effects of some selected atmospheric pollutants on animal population surrounding the Cleveland area

Period	Obligations
04/25/73-07/31/74	FY73: \$19,956 TOTAL: \$19,956
Prin. Invest.	NASA Tech. Officer
Craft, T. J.	HQ-PY/Pohly, J. G. 51-Biology
(10-371 340-00-00)	LERC/Fordyce, J. S.

NAS 3-17353 Hiram College 2952
Friction experiments and X-ray texture analysis of rubbing surfaces

Period	Obligations
03/13/73-07/12/73	FY73: \$7,980 TOTAL: \$7,980
Prin. Invest.	NASA Tech. Officer
Wheeler, D. R.	LERC/Buckley, D. H. 13-Physics
(22-701 598-85-00)	

NGR 36-007-027 Kent State University 2953
Low temperature specific heats of certain rare earth trihydrides crystal field and magnetic ordering effects

Period	Obligations
02/00/32-09/30/73	FY73: TOTAL: \$25,761
Prin. Invest.	NASA Tech. Officer
Johnson, D. L.	LERC/Brown, G. V. 13-Physics
(22-720 112-02-21)	

NSR 36-007-013 Kent State University 2954
Partial support of a conference on liquid crystals

Period	Obligations
01/01/66-07/01/76	FY73: TOTAL: \$1,750
Prin. Invest.	NASA Tech. Officer
Brown, G. H.	HQ-RR/ 47-Materials Engr
(10-740 129-00-00)	

NASA'S UNIVERSITY PROGRAM **OHIO (Continued)**

NAS 1-10040 **Ohio State University** **2955**
Study program for low noise 'S' band radiometer antenna development

Period	FY73:	Obligations	TOTAL:
05/22/70-05/22/73			\$136,999
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Peters, L.	LARC/Croswell, W. F.	45-Elec Engr	
(23-620 630-00-00)	(23-680 160-20-54)		

NAS 2-6634 **Ohio State University** **2956**
Study of weightlessness on development of vestibular apparatus and ocular nystagmus in the rat

Period	FY73:	Obligations	TOTAL:
09/30/71-09/30/73	\$19,000		\$44,969
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Clarke, D. L.	ARC/Oyama, J.	53-Other Medical	
	ARC/Mehler, W.		
(21-970 970-21-61)			

NAS 2-6779 **Ohio State University** **2957**
Helicopter rotor blade boundary layers

Period	FY73:	Obligations	TOTAL:
02/00/32-07/01/73			\$54,391
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Velkoff, H. R.	ARC/McCroskey, W. J.	41-Aero Engr	
	ARC/Morse, H. A.		
(21-760 136-9X-00)			

NAS 2-6792 **Ohio State University** **2958**
Comparison of structure otoliths of rats reared under normal hypergravity

Period	FY73:	Obligations	TOTAL:
01/12/72-06/12/73			\$17,327
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lim, D. J.	ARC/Oyama, J.	53-Other Medical	
(21-970 970-21-53)			

NAS 9-9695 **Ohio State University** **2959**
Investigations related to selenodetic control

Period	FY73:	Obligations	TOTAL:
06/24/69-03/31/73			\$149,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mueller, I. I.	JSC/Nance, R. L.	32-Gelological Sci	
(72-910 914-50-00)			

NAS 9-9696 **Ohio State University** **2960**
Effect of photographic image quality on attainable map accuracy

Period	FY73:	Obligations	TOTAL:
06/13/69-05/01/72			\$33,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ghosh, S. K.	JSC/Norman, P.	32-Gelological Sci	
(72-910 914-50-00)			

NAS 9-13093 **Ohio State University** **2961**
Investigations related to selenodetic control

Period	FY73:	Obligations	TOTAL:
06/29/72-08/31/74			\$59,800
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mueller, I. I.	JSC/Nance, R. L.	19-Phys Sci, NEC	
(72-910 914-50-00)			

NASR 141 **Ohio State University** **2962**
Source book of guidance materials related to education and vocational guidance in occupations involved in the exploration and use of space

Period	FY73:	Obligations	TOTAL:
10/01/66-12/01/77			\$2,625
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Peters, H. J.	HQ-RE/	45-Elec Engr	
(10-030 010-00-00)			

NASW 2435 **Ohio State University** **2963**
Geop-geodesy-solid-earth and ocean physics research conferences

Period	FY73:	Obligations	TOTAL:
07/26/72-12/01/73	\$13,500		\$13,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mueller, I. I.	HQ-ES/Murphy, J. P.	32-Gelological Sci	
(10-680 408-06-02)	(10-620 402-06-02)		

NGL 36-008-051 **Ohio State University** **2964**
Stress corrosion cracking of titanium alloys

Period	FY73:	Obligations	TOTAL:
06/23/66-06/01/79	\$26,000		\$208,696
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Beck, F. H.	LERC/Gray, H.	47-Materials Engr	
(22-740 134-03-21)			

NGL 36-008-093 **Ohio State University** **2965**
Data analysis for the national geodetic satellite program

Period	FY73:	Obligations	TOTAL:
08/23/67-06/01/74	\$127,024		\$555,518
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Mueller, I. I.	HQ-ES/Murphy, J. P.	19-Phys Sci, NEC	
(10-630 855-12-00)	(10-630 855-22-00)		

NGL 36-008-109 **Ohio State University** **2966**
Flutter of thermally stressed plates subject to large deflections

Period	FY73:	Obligations	TOTAL:
03/24/69-06/01/74			\$109,347
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bailey, C. D.	LARC/Naumann, E. C.	41-Aero Engr	
(23-742 124-08-31)	(23-760 720-00-00)	(23-742 124-00-00)	

NGL 36-008-117 **Ohio State University** **2967**
Fluid dynamic aspects of cardiovascular behavior during vibration

Period	FY73:	Obligations	TOTAL:
11/01/69-10/01/72			\$54,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Neren, R. M.	HQ-RA/Gessow, A.	41-Aero Engr	
(10-740 129-00-00)			

NGL 36-008-138 **Ohio State University** **2968**
A study of high performance antenna systems for space communication

Period	FY73:	Obligations	TOTAL:
08/14/69-11/01/72	\$30,000		\$136,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Richmond, J. H.	LARC/Croswell, W. F.	45-Elec Engr	
	LARC/Jones, J. E.		
(23-620 636-18-71)	(25-750 125-00-00)		

NASA'S UNIVERSITY PROGRAM **OHIO (Continued)**

NGR 36-008-004 **Ohio State University** **2969**
Biological effects of prolonged exposure of small mammals to closed gaseous environments low or free of nitrogen

Period	Obligations	
08/09/62-06/30/73	FY73:	TOTAL: \$379,190
Prin. Invest.	NASA Tech. Officer	CASE Category
Weiss, H. S.	ARC/Leon, H. A.	59-Life Sci, NEC
(10-870 189-00-00)	(21-770 127-00-00)	(21-770 127-49-37)

NGR 36-008-080 **Ohio State University** **2970**
Millimeter-wavelength propagation studies

Period	Obligations	
03/03/67-11/30/73	FY73: \$80,000	TOTAL: \$518,537
Prin. Invest.	NASA Tech. Officer	CASE Category
Ksienski, A. A.	GSFC/Hirschmann, E.	45-Elec Engr
Hodge, D. B.		
(51-620 164-21-72)		

NGR 36-008-144 **Ohio State University** **2971**
Flush-mounted antennas radiating through dielectric covered curved surfaces

Period	Obligations	
02/26/70-12/31/73	FY73: \$65,991	TOTAL: \$151,991
Prin. Invest.	NASA Tech. Officer	CASE Category
Peters, L., Jr.	LARC/Croswell, W. F.	45-Elec Engr
	LARC/Cockrell, C. R.	
(23-704 502-33-83)	(23-750 125-00-00)	(23-750 125-21-13)

NGR 36-008-161 **Ohio State University** **2972**
The direct combination of satellite and gravity data

Period	Obligations	
05/01/71-06/30/73	FY73: \$15,000	TOTAL: \$60,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rapp, R. H.	GSFC/Smith, D. E.	19-Phys Sci, NEC
	GSFC/Carpenter, L. H.	
(51-630 855-12-00)		

NGR 36-008-163 **Ohio State University** **2973**
Spectroscopic temperature measurements in arc-driven shock tube produced flows

Period	Obligations	
04/06/71-07/31/72	FY73:	TOTAL: \$16,568
Prin. Invest.	NASA Tech. Officer	CASE Category
Nerem, R. M.	LARC/Haggard, K. V.	13-Physics
(23-740 129-01-22)		

NGR 36-008-168 **Ohio State University** **2974**
Effects of pharmacologic agents on neuro endocrine processes regulating secretion of hormones

Period	Obligations	
03/13/72-05/31/73	FY73:	TOTAL: \$8,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Marks, B. M.	ARC/Danellis, J. V.	53-Other Medical
(21-970 970-21-12)		

NGR 36-008-169 **Ohio State University** **2975**
Radar return and radiometric emission from sea

Period	Obligations	
06/15/71-01/31/74	FY73: \$20,000	TOTAL: \$70,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Peake, W. H.	LARC/Painter, J. H.	45-Elec Engr
(23-620 636-18-71)	(23-620 630-52-00)	

NGR 36-008-177 **Ohio State University** **2976**
Computer programs for analysis of spacecraft antennas

Period	Obligations	
11/02/71-12/31/72	FY73:	TOTAL: \$14,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Peters, L., Jr.	LARC/Croswell, W. F.	45-Elec Engr
	LARC/Bailey, M. C.	
(23-750 135-17-02)		

NGR 36-008-193 **Ohio State University** **2977**
Evaluation of pulsed ultrasonic Doppler flowmeter

Period	Obligations	
10/30/72-04/01/73	FY73: \$9,842	TOTAL: \$9,842
Prin. Invest.	NASA Tech. Officer	CASE Category
Wells, M. K.	ARC/Sandler, H.	52-Clinical Med
(21-970 970-23-30)		

NGR 36-008-197 **Ohio State University** **2978**
Application of the general energy equation a unified approach to mechanics

Period	Obligations	
04/23/73-03/31/74	FY73: \$24,000	TOTAL: \$24,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Bailey, C. D.	LARC/Lester, H. C.	49-Engr, NEC
(23-704 501-22-03)		

NGT 36-008-006 **Ohio State University** **2979**
Training of graduate students in space-related science and technology

Period	Obligations	
04/03/63-08/01/72	FY73:	TOTAL: \$691,446
Prin. Invest.	NASA Tech. Officer	CASE Category
Roaden, A.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NSR 36-008-108 **Ohio State University** **2980**
Critical analysis and review of state-of-the-art in space medicine

Period	Obligations	
06/27/68-06/30/73	FY73:	TOTAL: \$225,359
Prin. Invest.	NASA Tech. Officer	CASE Category
Ellingson, H. V.	HQ-MM/Brownstein, H.	59-Life Sci, NEC
	HQ-MM/Link, M. M.	
(10-980 904-00-00)	(10-980 908-90-00)	

NGR 36-009-017 **Ohio University** **2981**
Air transportation problems with emphasis on general aviation avionics

Period	Obligations	
03/04/71-08/31/75	FY73: \$56,125	TOTAL: \$182,125
Prin. Invest.	NASA Tech. Officer	CASE Category
McFarland, R. H.	LARC/Mace, W. D.	41-Aero Engr
	LARC/Mace, W. D.	
(23-704 501-03-02)	(23-750 125-19-01)	

NAS 1-11104 **University of Cincinnati** **2982**
Study of three-dimensional boundary layer problem

Period	Obligations	
09/30/71-05/30/73	FY73:	TOTAL: \$16,296
Prin. Invest.	NASA Tech. Officer	CASE Category
Davis, R. T.	LARC/Harris, J. E.	41-Aero Engr
	LARC/Beckwith, I. E.	
(23-760 136-13-04)		

NASA'S UNIVERSITY PROGRAM **OHIO (Continued)**

NAS 1-11105 **University of Cincinnati** **2983**
Asteroid orbit calculations

Period	Obligations
09/10/71-06/30/73	FY73: TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Herget, P.	LARC/Brooks, D. R. 11-Astronomy
	LARC/Harrison, E. F.

(23-705 110-06-05)

NGL 36-004-014 **University of Cincinnati** **2984**
Multidisciplinary space-related research in the physical, engineering, life and social sciences

Period	Obligations
01/25/66-12/01/72	FY73: TOTAL: \$720,000
Prin. Invest.	NASA Tech. Officer CASE Category
Guston, R. L.	HQ-PY/Redding, E. R. 99-Multi-Discip
	LERC/Olson, W. T.

(10-370 183-00-00) (10-371 340-00-00)

NGR 36-004-054 **University of Cincinnati** **2985**
Investigations in superconductivity

Period	Obligations
06/07/71-05/31/73	FY73: TOTAL: \$49,804
Prin. Invest.	NASA Tech. Officer CASE Category
Joiner, W. C.	LERC/Brown, G. V. 13-Physics

(22-720 112-02-21) (22-740 129-02-21)

NGR 36-004-055 **University of Cincinnati** **2986**
Erosion phenomena within radial turbines and methods for its reduction

Period	Obligations
05/04/71-05/03/74	FY73: TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer CASE Category
Tabakoff, W.	LERC/Stewart, W. L. 46-Mech Engr
	LERC/Means, J. L.

(22-760 126-63-10)

NGR 36-004-056 **University of Cincinnati** **2987**
Effects of group I impurities in II-VI compounds: sodium doped cadmium sulfide and zinc oxide

Period	Obligations
09/01/71-09/01/73	FY73: \$45,859 TOTAL: \$85,059
Prin. Invest.	NASA Tech. Officer CASE Category
Harness, D.	LERC/Olson, W. T. 47-Materials Engr
	LERC/Mather, R. F.

Weisman, J.
(22-704 503-10-04) (22-720 112-02-23)

NGR 36-004-061 **University of Cincinnati** **2988**
NASA traineeship program in aeronautics

Period	Obligations
04/21/72-08/31/74	FY73: TOTAL: \$36,700
Prin. Invest.	NASA Tech. Officer CASE Category
Wells, W. R.	LARC/Queijo, M. J. 41-Aero Engr
	LARC/Suit, W. T.

(23-760 136-13-01)

NGR 36-004-063 **University of Cincinnati** **2989**
Processing and properties of polyimide and pyrrone composites

Period	Obligations
08/03/72-09/01/73	FY73: \$23,070 TOTAL: \$23,070
Prin. Invest.	NASA Tech. Officer CASE Category
Chartoff, R. P.	LARC/Price, H. L. 43-Chem Engr

(23-704 501-21-23)

NGR 36-004-064 **University of Cincinnati** **2990**
Two-dimensional flow losses of a turbine with boundary layer injection

Period	Obligations
06/13/72-09/30/75	FY73: TOTAL: \$44,760
Prin. Invest.	NASA Tech. Officer CASE Category
Tabakoff, W.	LERC/Prust, H. W., Jr. 41-Aero Engr

(22-702 741-72-04)

NGR 36-004-065 **University of Cincinnati** **2991**
NASA traineeship program in aeronautics

Period	Obligations
07/26/72-08/01/73	FY73: \$18,112 TOTAL: \$18,112
Prin. Invest.	NASA Tech. Officer CASE Category
Sobel, L. H.	LARC/Davis, R. C. 41-Aero Engr
	LARC/Peterson, J. P.

(23-704 501-22-03)

NGR 36-004-069 **University of Cincinnati** **2992**
Three-dimensional boundary layer problems related to space shuttle configurations

Period	Obligations
01/01/72-01/01/74	FY73: \$12,120 TOTAL: \$12,120
Prin. Invest.	NASA Tech. Officer CASE Category
Davis, R. T.	LARC/Harris, J. E. 41-Aero Engr
	LARC/Beckwith, I. E.

(23-704 502-37-01)

NGT 36-004-003 **University of Cincinnati** **2993**
Training of graduate students inspace-related science and technology

Period	Obligations
03/21/63-08/01/72	FY73: TOTAL: \$593,001
Prin. Invest.	NASA Tech. Officer CASE Category
Wessel, R. H.	HQ-PY/Carter, C. H. 99-Multi-Discip

(10-370 181-00-00)

NAS 8-26600 **University of Dayton** **2994**
Study of jimsphere wind sensor

Period	Obligations
11/17/70-01/15/73	FY73: TOTAL: \$72,187
Prin. Invest.	NASA Tech. Officer CASE Category
Engler, N. A.	MSFC/Fichtl, G. H. 41-Aero Engr
	MSFC/Vaughan, W. W.

(62-763 133-61-10) (62-910 933-50-00)

NAS 8-28231 **University of Dayton** **2995**
Interrelated structure of high altitude atmospheric profiles for exit/entry characteristic heating analyses

Period	Obligations
02/11/72-08/29/72	FY73: TOTAL: \$9,995
Prin. Invest.	NASA Tech. Officer CASE Category
Engler, N. A.	MSFC/Smith, R. E. 31-Atmos Sci
	MSFC/Johnson, D. L.

(62-980 908-52-46)

NGR 36-010-022 **University of Toledo** **2996**
Scattering properties of interstellar dust particles

Period	Obligations
04/17/72-02/28/74	FY73: \$10,612 TOTAL: \$20,612
Prin. Invest.	NASA Tech. Officer CASE Category
Witt, A. D.	HQ-SG/Dubin, M. 11-Astronomy
	HQ-SG/Calahan, D.

(10-850 385-45-00) (10-850 188-45-53)

NASA'S UNIVERSITY PROGRAM **OHIO (Continued)**

NGR 36-010-024 University of Toledo 2997
Adaptive system optimization for integrated air-breathing engine systems

Period	FY73:	Obligations	TOTAL:
09/01/71-08/31/74			\$39,400

Prin. Invest. NASA Tech. Officer CASE Category
Leininger, G. G. LERC/Willoh, R. G. 49-Engr, NEC
(22-760 126-63-10)

NGR 36-028-004 Youngstown State University 2998
Solid state converter for measurement of aircraft noise & sonic boom

Period	FY73:	Obligations	TOTAL:
08/18/71-08/31/72			\$16,763

Prin. Invest. NASA Tech. Officer CASE Category
Zuckerwar, A. J. LARC/Holmes, H. K. 45-Elec Engr
(23-762 132-80-01)

NGR 36-028-006 Youngstown State University 2999
Application of ultrasonic signature analysis for fatigue detection in complex structures

Period	FY73:	Obligations	TOTAL:
08/03/72-09/01/73	\$12,534		\$12,534

Prin. Invest. NASA Tech. Officer CASE Category
Zuckerwar, A. J. LARC/Gray, D. L. 49-Engr, NEC
(23-704 501-22-02)

OKLAHOMA

NAS 2-7273 Oklahoma State University 3000
Operation of arc tour visitor program for FY 73

Period	FY73:	Obligations	TOTAL:
10/26/72-07/01/73	\$18,500		\$18,500

Prin. Invest. NASA Tech. Officer CASE Category
Wiggins, K. ARC/Miller, S. A. 79-Soc Sci, NEC
ARC/King, L. D.
(21-030 023-00-00)

NASW 1964 Oklahoma State University 3001
Space science education project

Period	FY73:	Obligations	TOTAL:
09/30/69-06/30/73	\$834,050		\$3,046,090

Prin. Invest. NASA Tech. Officer CASE Category
Wiggins, K. E. HQ-FE/Collin, E. E. 99-Multi-Discip
HQ-FE/Rich, W. B.
(10-030 023-00-00) (23-030 039-00-00) (23-030 023-00-00)

NGR 37-002-096 Oklahoma State University 3002
Optimal controller design for high-performance aircraft undergoing large-disturbance angles

Period	FY73:	Obligations	TOTAL:
02/01/73-12/31/73	\$14,360		\$14,360

Prin. Invest. NASA Tech. Officer CASE Category
Rhoten, R. P. LARC/Moul, M. T. 45-Elec Engr
(23-702 766-75-02)

NASW 2379 Southeastern State College 3003
Technology use studies center special dissemination experiment

Period	FY73:	Obligations	TOTAL:
05/31/72-05/31/73			\$55,000

Prin. Invest. NASA Tech. Officer CASE Category
Gold, C. H. HQ-KT/Holley, H. L. 99-Multi-Discip
(10-250 141-93-00)

NASW 2512 Southeastern State College 3004
Continuation of the technology use studies special dissemination experiment

Period	FY73:	Obligations	TOTAL:
06/04/73-05/31/74	\$55,000		\$55,000

Prin. Invest. NASA Tech. Officer CASE Category
HQ-KT/
(10-250 141-93-01) 99-Multi-Discip

NGT 37-003-044 University of Oklahoma-Health Center 3005
Three year residency training in aerospace medicine for two trainees

Period	FY73:	Obligations	TOTAL:
03/13/69-12/31/72			\$53,454

Prin. Invest. NASA Tech. Officer CASE Category
HQ-PY/
(10-770 127-00-00) 59-Life Sci, NEC

NAS 8-28659 University of Oklahoma - Norman 3006
Study and development of an acoustical radar system

Period	FY73:	Obligations	TOTAL:
04/03/72-12/31/73	\$9,997		\$54,983

Prin. Invest. NASA Tech. Officer CASE Category
Inman, R. L. MSFC/Turner, R. E. 31-Atmos Sci
MSFC/Nelson, J. F.
(62-704 501-08-10) (62-910 933-50-00)

NAS 8-30175 University of Oklahoma - Norman 3007
Crossed beam spectrometer development; crossed beam spectroscopy in multicomponent gas flows

Period	FY73:	Obligations	TOTAL:
02/25/69-11/01/73			\$144,801

Prin. Invest. NASA Tech. Officer CASE Category
Canfield, J. M. MSFC/Stephens, J. B. 41-Aero Engr
MSFC/Fichtl, G. H.
(62-680 160-75-61) (62-750 125-00-00)

NAS 9-13360 University of Oklahoma - Norman 3008
Analysis of severe storm environments Skylab investigation 582 2

Period	FY73:	Obligations	TOTAL:
04/23/73-02/28/75	\$49,000		\$49,000

Prin. Invest. NASA Tech. Officer CASE Category
Sasaki, Y. JSC/Pitts, D. E. 31-Atmos Sci
(72-960 948-63-84)

NGR 37-008-002 University of Tulsa 3009
Lunar sample analysis

Period	FY73:	Obligations	TOTAL:
02/02/71-07/31/73	\$1,600		\$57,250

Prin. Invest. NASA Tech. Officer CASE Category
Barker, C. JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00) (10-810 383-09-50)

NASA'S UNIVERSITY PROGRAM OKLAHOMA (Continued)

NGR 37-008-003 **University of Tulsa** **3010**
Energy transfer in volume reflecting heat shields
Period *Obligations*
11/05/71-12/31/73 FY73: \$31,100 TOTAL: \$53,222
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Weston, K. C. ARC/Howe, J. T. 47-Materials Engr
ARC/Nachtsheim, P. R.
(21-704 502-27-01)

OREGON

NGR 38-010-005 **Linfield College** **3011**
Measurement of single crystal surface parameters
Period *Obligations*
10/12/71-05/31/73 FY73: \$6,708 TOTAL: \$41,297
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Swanson, L. W. LERC/Smith, A. L. 19-Phys Sci, NEC
Swanson, L. W. LERC/Brettwieser, R.
(22-704 503-25-01)

NAS 5-21831 **Oregon State University** **3012**
Two ERTS-A data user investigations
Period *Obligations*
09/07/72-03/01/74 FY73: \$353,000 TOTAL: \$353,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Smionson, G. H. GSFC/Crump, E. W. 39-Env Sci, NEC
Schrumph, B. J. GSFC/Ragland, T. M.
(51-680 641-14-07)

NGL 38-002-020 **Oregon State University** **3013**
Instrumental activation analysis of rare earths and other elements
Period *Obligations*
08/26/66-08/31/76 FY73: \$39,598 TOTAL: \$352,122
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Schmitt, R. A. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Pomeroy, J. H.
(10-810 383-09-57) (10-810 195-42-67) (10-860 849-00-00)

NGL 38-002-032 **Oregon State University** **3014**
Neutron activation analysis of extraterrestrial particles
Period *Obligations*
04/22/69-06/01/72 FY73: TOTAL: \$30,040
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Schmitt, R. A. JSC/High, R. W. 11-Astronomy
JSC/Cour-Palais, B.
(72-742 124-00-00)

NGL 38-002-039 **Oregon State University** **3015**
Lunar sample analysis
Period *Obligations*
01/19/71-01/31/76 FY73: \$49,300 TOTAL: \$181,900
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Schmitt, R. A. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGL 38-002-053 **Oregon State University** **3016**
Development and operation of an environmental remote sensing applications laboratory
Period *Obligations*
03/16/72-03/01/75 FY73: \$125,000 TOTAL: \$275,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Poulton, C. E. HQ-PY/Vitale, J. A. 39-Env Sci, NEC
(10-371 340-00-00)

NGR 38-002-013 **Oregon State University** **3017**
Physiological ecology of cryophilic algae
Period *Obligations*
11/17/65-06/30/73 FY73: TOTAL: \$121,350
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Curl, C. H. HQ-SL/Geib, D. S. 51-Biology
(10-870 189-00-00) (10-840 192-55-64)

NGR 38-002-018 **Oregon State University** **3018**
Development of a lexicon of space science terms for use by elementary school grades 4 through 6
Period *Obligations*
06/16/66-12/31/73 FY73: TOTAL: \$16,050
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Williamson, S. E. HQ-FE/Tuttle, F. B. 12-Chemistry
(10-030 023-00-00)

NGR 38-002-048 **Oregon State University** **3019**
Mobile optical radar sep for haze measurement
Period *Obligations*
06/24/71-12/31/72 FY73: TOTAL: \$36,085
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Olsson, L. E. LARC/Reichle, H. G., Jr. 31-Atmos Sci
Hewson, E. W. LARC/Melfi, S. H.
(23-680 160-20-56)

NGT 38-002-001 **Oregon State University** **3020**
Training of graduate students in space-related science and technology
Period *Obligations*
04/06/63-08/01/72 FY73: TOTAL: \$758,675
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hansen, H. P. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 8-29256 **Portland State University** **3021**
Low light level television observation of Apollo
Period *Obligations*
10/05/72-07/01/73 FY73: \$3,432 TOTAL: \$3,432
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gurevitch, M. MSFC/Gary, A. 13-Physics
MSFC/Craven, P.
(62-910 914-49-00)

NAS 9-13482 **Portland State University** **3022**
High altitude photography
Period *Obligations*
05/15/73-05/21/73 FY73: \$7,755 TOTAL: \$7,755
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Fitzgerald, A. JSC/Mechelay, J. E. 39-Env Sci, NEC
(72-960 961-50-00)

NASA'S UNIVERSITY PROGRAM **OREGON (Continued)**

NAS 9-9690 **University of Oregon - Eugene** **3023**
Operation and maintenance of NASA MSC geophysical branch
mobile laboratory

Period	Obligations	
06/24/69-04/30/74	FY73: TOTAL: \$60,763	
Prin. Invest.	NASA Tech. Officer	CASE Category
Blank, H. R.	JSC/Strangway, D. W.	32-Geological Sci
(72-910 914-50-00)	(72-910 914-40-00)	

NGL 38-003-010 **University of Oregon - Eugene** **3024**
Geochemistry of trace elements in meteorites and related
materials

Period	Obligations	
06/13/67-08/01/74	FY73: \$7,300 TOTAL: \$163,581	
Prin. Invest.	NASA Tech. Officer	CASE Category
Goles, G. G.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-MA/Pomeroy, J. H.	
(10-810 383-09-37)		

NGL 38-003-022 **University of Oregon - Eugene** **3025**
Lunar sample analysis

Period	Obligations	
02/09/71-01/31/76	FY73: \$71,890 TOTAL: \$220,990	
Prin. Invest.	NASA Tech. Officer	CASE Category
Weill, D. F.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGL 38-003-024 **University of Oregon - Eugene** **3026**
Lunar sample analysis

Period	Obligations	
12/29/70-02/01/75	FY73: \$49,100 TOTAL: \$238,100	
Prin. Invest.	NASA Tech. Officer	CASE Category
Goles, G. G.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 38-003-020 **University of Oregon - Eugene** **3027**
Inspection of petrologically significant physical and chemical
properties of the silicate melts

Period	Obligations	
06/01/70-05/01/75	FY73: TOTAL: \$227,060	
Prin. Invest.	NASA Tech. Officer	CASE Category
Weill, D. F.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	
(10-810 195-42-65)	(10-810 383-09-53)	(10-810 383-09-50)

NGR 38-003-025 **University of Oregon - Eugene** **3028**
A preliminary photogeological study of Mars

Period	Obligations	
09/18/70-08/31/71	FY73: TOTAL: \$10,077	
Prin. Invest.	NASA Tech. Officer	CASE Category
Goles, G. G.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Morris, E. C.	
(10-840 384-50-71)		

NGR 38-003-034 **University of Oregon - Eugene** **3029**
Measurements of far infrared upper atmosphere emission
spectrum

Period	Obligations	
02/27/73-02/28/74	FY73: \$9,738 TOTAL: \$9,738	
Prin. Invest.	NASA Tech. Officer	CASE Category
Donnelly, R. J.	ARC/Cameron, R. M.	31-Atmos Sci
	ARC/Gillespie, C. M.	
(21-850 352-02-03)		

NGR 38-003-035 **University of Oregon - Eugene** **3030**
Submillimeter spectroscopy of planets and gaseous nebulae

Period	Obligations	
02/28/73-02/28/74	FY73: \$5,271 TOTAL: \$5,271	
Prin. Invest.	NASA Tech. Officer	CASE Category
Donnelly, R. J.	ARC/Cameron, R. M.	11-Astronomy
	ARC/Gillespie, C. M.	
(21-850 352-02-03)		

NGR 38-003-036 **University of Oregon - Eugene** **3031**
Transition probability in multiply ionized atoms

Period	Obligations	
07/03/72-06/01/73	FY73: \$16,000 TOTAL: \$16,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Crasemann, B.	ARC/Whiting, E. E.	13-Physics
	ARC/Arnold, J. O.	
(21-704 502-01-02)		

PENNSYLVANIA

NGR 39-018-002 **Bryn Mawr College** **3032**
Acquisition, long-term maintenance & extinction of stimulus
control

Period	Obligations	
02/27/69-09/07/73	FY73: \$3,000 TOTAL: \$57,485	
Prin. Invest.	NASA Tech. Officer	CASE Category
Yarczower, M.	ARC/Patton, M.	59-Life Sci, NEC
(21-970 970-24-01)		

NGR 39-027-002 **Bucknell University** **3033**
Theoretical analysis of gas particle flow in blade passages of
turbo machinery

Period	Obligations	
01/29/73-05/25/73	FY73: \$4,424 TOTAL: \$4,424	
Prin. Invest.	NASA Tech. Officer	CASE Category
Maxwell, B. R.	LERC/Seasholtz, R. G.	49-Engr, NEC
	LERC/Katsanis, T.	
(22 704 501-24-07)		

NAS 8-28737 **Carnegie-Mellon University** **3034**
Electro-optical processing of phased array data

Period	Obligations	
05/04/72-05/01/73	FY73: TOTAL: \$9,830	
Prin. Invest.	NASA Tech. Officer	CASE Category
Casasent, D.	MSFC/Inman, R. A.	45-Elec Engr
	MSFC/Inman, R. I.	
(62-960 964-50-00)		

NGL 39-002-023 **Carnegie-Mellon University** **3035**
Analysis of notches and cracks

Period	Obligations	
10/12/66-04/01/73	FY73: TOTAL: \$181,500	
Prin. Invest.	NASA Tech. Officer	CASE Category
Swedlow, J. L.	LARC/McComb, H. M.	46-Mech Engr
(23-760 126-00-00)		

NASA'S UNIVERSITY PROGRAM
PENNSYLVANIA (Continued)

NGR 39-087-001 **Carnegie-Mellon University** **3036**
Launch window analysis of highly eccentric orbits

<i>Period</i>	<i>Obligations</i>	
05/01/68-08/31/73	FY73:	TOTAL: \$89,547
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Renard, M. L.	GSFC/Paddack, S. J.	42-Astro Engr
(51-850 861-00-00)	(51-850 861-41-00)	

NGR 39-087-003 **Carnegie-Mellon University** **3037**
Investigation of the effects of microstructure on fracture toughness of high-strength alloys

<i>Period</i>	<i>Obligations</i>	
05/01/68-08/01/73	FY73: \$29,986	TOTAL: \$149,399
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Low, J. R.	LERC/Brown, W. F., Jr.	47-Materials Engr
Lambert, R. H.		
(22-740 129-03-21)		

NGR 39-087-021 **Carnegie-Mellon University** **3038**
Studies of heterodyne solar cell performance

<i>Period</i>	<i>Obligations</i>	
04/01/70-04/30/74	FY73: \$50,202	TOTAL: \$140,229
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Milnes, A. G.	LARC/Walker, G. H.	13-Physics
Feucht, D. L.	LARC/Conway, E. J.	
(23-704 502-01-03)	(10-740 129-00-00)	

NGR 39-087-026 **Carnegie-Mellon University** **3039**
Attitude dynamics of spin-stabilized satellites with flexible appendages

<i>Period</i>	<i>Obligations</i>	
12/29/70-06/30/73	FY73:	TOTAL: \$21,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Renard, M. L.	GSFC/Paddack, S. J.	42-Astro Engr
(51-850 861-51-00)		

NGR 39-087-036 **Carnegie-Mellon University** **3040**
Automatic detection of blurred images by a simple coherent optical processor

<i>Period</i>	<i>Obligations</i>	
12/01/71-11/30/73	FY73: \$45,086	TOTAL: \$78,586
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, S. H.	GSFC/Schaefer, D. H.	45-Elec Engr
	GSFC/Strong, J. P., III	
(51-704 502-23-32)		

NGR 39-087-037 **Carnegie-Mellon University** **3041**
Studies in optical image processing

<i>Period</i>	<i>Obligations</i>	
11/15/71-12/31/73	FY73: \$12,000	TOTAL: \$17,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lee, S. R.	GSFC/Shulman, A. R.	13-Physics
(51-500 310-40-39)		

NGR 39-087-047 **Carnegie-Mellon University** **3042**
Investigation of the effects of microstructure on the fracture toughness of high strength titanium alloys

<i>Period</i>	<i>Obligations</i>	
10/09/72-10/01/73	FY73: \$27,699	TOTAL: \$27,699
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Low, J. R., Jr.	LERC/Misencik, J. A.	47-Materials Engr
	LERC/Smith, G. T.	
(22-704 502-22-03)		

NGT 39-002-002 **Carnegie-Mellon University** **3043**
Training of graduate students in space-related science and technology

<i>Period</i>	<i>Obligations</i>	
03/22/63-08/01/72	FY73:	TOTAL: \$1,134,846
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Strehler, A. F.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NAS 1-11871 **Drexel University** **3044**
Investigation of ESSA VII radiation data for use in long term earth balance experiment

<i>Period</i>	<i>Obligations</i>	
07/25/72-12/31/73	FY73: \$32,000	TOTAL: \$32,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
House, F. B.	LARC/Sweet, G. E.	31-Atmos Sci
Kohri, W. J.		
(23-680 160-44-9X)		

NGL 39-004-020 **Drexel University** **3045**
Research and doctoral study in management of large-scale technical projects

<i>Period</i>	<i>Obligations</i>	
02/13/69-01/01/73	FY73:	TOTAL: \$319,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hagerty, W. W.	HQ-PY/Morris, J. D.	75-Political Sci
Golden, E.		
(10-370 183-00-00)	(10-371 340-00-00)	

NGR 39-004-038 **Drexel University** **3046**
Development of visual-display aid to air navigation

<i>Period</i>	<i>Obligations</i>	
01/01/71-12/31/72	FY73:	TOTAL: \$114,615
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Matcovich, T. J.	LARC/Long, W. C.	49-Engr, NEC
	LARC/Pitts, F. L.	
(23-750 135-17-02)	(23-760 736-10-10)	(23-750 125-19-09)

NGR 39-004-041 **Drexel University** **3047**
Explosive shock damage potential in space structures

<i>Period</i>	<i>Obligations</i>	
06/14/71-09/30/72	FY73:	TOTAL: \$30,449
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mortimer, R. W.	LARC/Thomson, R. G.	46-Mech Engr
(23-742 124-08-14)		

NGR 39-004-042 **Drexel University** **3048**
Definition phase of Grand Tour missions meteoroid investigations for outer planet missions

<i>Period</i>	<i>Obligations</i>	
04/06/71-03/31/73	FY73:	TOTAL: \$121,521
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Soberman, R. K.	HQ-SL/Mitz, M. A.	13-Physics
	HQ-SL/Keller, J. W.	
(10-840 186-68-68)	(10-840 186-68-52)	

NGL 39-006-001 **Haverford College** **3049**
Wave functions & transition probabilities for light & highly ionized atoms

<i>Period</i>	<i>Obligations</i>	
10/01/62-11/30/73	FY73:	TOTAL: \$234,518
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Greene, L. C.	HQ-SG/Bogges, N. W.	11-Astronomy
	HQ-SG/Ott, E. J.	
(10-850 188-00-00)		

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NAS 8-28654 **Lehigh University** **3050**
Electrophoresis flight experiment
Period *Obligations*
04/27/72-03/15/74 FY73: \$49,970 TOTAL: \$75,311
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Vanderhoff, J. W. MSFC/Snyder, R. S. 12-Chemistry
MSFC/Cantrell, J. P.
(62-980 975-90-95)

NAS 9-8084 **Lehigh University** **3051**
Replication and thin section electron microscopy to determine the damage in minerals and rocks due to shock
Period *Obligations*
06/26/68-08/01/71 FY73: TOTAL: \$68,700
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Sclar, C. B. JSC/Harris, J. W. 32-Geological Sci
(72-910 914-40-00)

NAS 9-10401 **Lehigh University** **3052**
Lunar sample analysis
Period *Obligations*
12/23/69-09/01/71 FY73: TOTAL: \$22,038
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldstein, J. I. JSC/Harris, J. W. 32-Geological Sci
(72-910 914-40-00)

NGL 39-007-007 **Lehigh University** **3053**
Investigation of solidification structure & eutectic alloys including consideration of properties control
Period *Obligations*
02/17/65-06/30/75 FY73: \$46,000 TOTAL: \$371,267
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kraft, R. W. LERC/Ashbrook, R. L. 47-Materials Engr
Hertzberg, R. W.
Notis, M. R.
(22-704 501-01-06) (10-740 129-00-00) (22-740 134-03-23)

NGL 39-007-040 **Lehigh University** **3054**
Investigation of temperature influence on fatigue-crack growth
Period *Obligations*
10/04/68-08/01/73 FY73: TOTAL: \$120,855
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wei, R. P. LARC/Newman, J. C., Jr. 47-Materials Engr
(23-740 129-00-00) (23-760 126-00-00) (23-740 129-03-21)

NGR 39-007-011 **Lehigh University** **3055**
Investigation of fatigue crack propagation in thin plates and shells
Period *Obligations*
12/01/64-07/31/73 FY73: \$38,035 TOTAL: \$267,945
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Erdogan, F. LARC/Ilg, W. 21-Mathematics
LARC/Roderick, G. L.
(23-704 501-22-02) (10-760 126-00-00) (23-760 720-00-00)

NGR 39-007-043 **Lehigh University** **3056**
Shock and thermal history of unusual iron meteorites
Period *Obligations*
05/24/71-05/31/75 FY73: \$9,935 TOTAL: \$72,865
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldstein, J. I. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Pomeroy, J. H.
(10-810 195-42-67) (10-810 383-09-50)

NGR 39-007-056 **Lehigh University** **3057**
Lunar sample analysis
Period *Obligations*
01/12/71-01/31/74 FY73: \$36,800 TOTAL: \$102,920
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goldstein, J. I. JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)

NGR 39-007-061 **Lehigh University** **3058**
Investigation of generation of X-rays in close binary stars
Period *Obligations*
03/10/73-01/15/74 FY73: \$2,965 TOTAL: \$17,965
Prin. Invest. *NASA Tech. Officer* *CASE Category*
McCluskey, G. E., Jr. JSC/Kondo, Y. 13-Physics
(72-950 951-16-00) (72-910 914-50-00)

NGR 39-007-064 **Lehigh University** **3059**
Lunar sample analysis
Period *Obligations*
06/07/71-01/31/74 FY73: \$58,450 TOTAL: \$180,160
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Sclar, C. B. JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)

NGR 39-007-066 **Lehigh University** **3060**
Stress analysis of through & surface cracks
Period *Obligations*
04/21/71-05/31/73 FY73: TOTAL: \$53,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Sih, G. C. LARC/Fichter, W. B. 46-Mech Engr
LARC/Poe, C. C.
(23-760 737-54-12) (23-740 134-03-21)

NGR 39-007-067 **Lehigh University** **3061**
Hydrogen absorption and diffusion & subcritical crack growth in high-strength steels & nickel base alloys
Period *Obligations*
11/01/71-11/01/73 FY73: \$49,885 TOTAL: \$99,640
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wei, R. P. LERC/Misencik, J. A. 47-Materials Engr
Klier, K. LERC/Smith, G. T.
(22-704 502-22-03)

NGT 39-007-003 **Lehigh University** **3062**
Training of graduate students in space-related science & technology
Period *Obligations*
03/21/63-08/01/72 FY73: TOTAL: \$766,864
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Slout, R. D. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 1-12045 **Pennsylvania State University** **3063**
Construction and calibration of pyrotechnic shock monitoring apparatus
Period *Obligations*
12/29/72-08/28/73 FY73: \$9,873 TOTAL: \$9,873
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Neubert, V. H. LARC/Bement, L. J. 46-Mech Engr
(23-704 502-24-41)

NASA'S UNIVERSITY PROGRAM

PENNSYLVANIA (Continued)

NAS 2-6312 **Pennsylvania State University** **3064**
Rotor noise research
Period *Obligations*
02/11/71-11/15/73 **FY73:** **TOTAL: \$29,977**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Arndt, R. A. ARC/Morse, H. A. 41-Aero Engr
ARC/Borgman, D. C.
(21-760 126-9X-00) (21-760 126-00-00)

NAS 3-17855 **Pennsylvania State University** **3065**
Basic noise research compressor or fan rotor wake characteristic
Period *Obligations*
06/28/73-06/27/74 **FY73: \$54,267** **TOTAL: \$54,267**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lakshminarayana, B. LERC/Heidmann, M. F. 41-Aero Engr
LERC/Gelder, T. F.
(22-704 501-04-01)

NAS 5-23133 **Pennsylvania State University** **3066**
Interpretation of ERTS data
Period *Obligations*
06/29/72-09/29/74 **FY73: \$124,000** **TOTAL: \$134,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
McMurtry, G. J. GSFC/Szajna, E. F. 39-Env Sci, NEC
Petersen, G. W.
(51-680 641-14-07) (51-680 641-14-00)

NAS 8-21140 **Pennsylvania State University** **3067**
Investigation of turbulent wind field below 500 feet altitude at the Easter test range, Florida
Period *Obligations*
06/02/67-10/09/73 **FY73:** **TOTAL: \$145,839**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Blackadar, A. K. MSFC/Fichtl, G. 31-Atmos Sci
MSFC/Kautman, J.
(62-742 124-00-00) (62-760 126-00-00)

NAS 8-27334 **Pennsylvania State University** **3068**
Structure of turbulence in severe atmospheric conditions
Period *Obligations*
05/01/71-12/30/73 **FY73:** **TOTAL: \$49,768**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
MSFC/Fichtl, G. H. 31-Atmos Sci
(62-760 126-61-10)

NAS 9-13406 **Pennsylvania State University** **3069**
Interdisciplinary application of EREP data within the Susquehanna River basin Skylab EREP investigation no. 475
Period *Obligations*
05/01/73-12/31/74 **FY73: \$32,000** **TOTAL: \$32,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
McMurtry, G. J. JSC/Miller, M. L. 32-Geological Sci
(72-960 948-63-83)

NGL 39-009-002 **Pennsylvania State University** **3070**
Study of ionospheric electron content & upper ionosphere ionic processes by means of satellite radio transmissions
Period *Obligations*
11/01/60-09/30/75 **FY73: \$30,000** **TOTAL: \$668,245**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Ross, W. J. HQ-SG/Schmerling, E. R. 13-Physics
HQ-SG/Kavanagh, L. D.
(10-850 188-36-56) (10-850 188-00-00) (10-850 188-39-52)

NGL 39-009-003 **Pennsylvania State University** **3071**
Research on electron densities in upper ionosphere, including studies of rocket & separating capsule experimental techniques
Period *Obligations*
03/01/61-10/31/75 **FY73: \$115,000** **TOTAL: \$1,576,661**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Nisbet, J. S. HQ-SG/Schmerling, E. R. 31-Atmos Sci
HQ-SG/Hallenbeck, D. R.
(10-850 188-36-56) (10-850 188-00-00) (10-850 879-00-00)

NGL 39-009-007 **Pennsylvania State University** **3072**
Investigation & analysis of flow phenomena of secondary motions in axial flow inducers
Period *Obligations*
12/15/63-02/01/74 **FY73:** **TOTAL: \$279,750**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lakshminarayana, B. LERC/Britsch, W. R. 41-Aero Engr
(10-710 128-00-00) (22-710 128-00-00) (22-710 113-31-09)

NGL 39-009-010 **Pennsylvania State University** **3073**
Research to establish criteria for recognition of ancient meteorite impact craters whose characteristic surface forms have been obliterated by erosion
Period *Obligations*
08/08/63-12/01/74 **FY73:** **TOTAL: \$151,563**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gold, D. P. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Allenby, R. J.
(10-840 185-00-00) (10-810 195-42-63) (10-810 195-42-64)

NGL 39-009-015 **Pennsylvania State University** **3074**
Multidisciplinary space-related research
Period *Obligations*
09/17/65-08/01/72 **FY73:** **TOTAL: \$1,400,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Ebaugh, P. HQ-PY/Redding, E. R. 99-Multi-Discip
HQ-PY/Quinn, H. B.
(10-370 183-00-00)

NGL 39-009-023 **Pennsylvania State University** **3075**
Research and development of on-board control systems and elements for aerospace vehicles
Period *Obligations*
10/22/64-09/01/73 **FY73:** **TOTAL: \$403,296**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shearer, J. L. HQ-RE/Janow, C. 49-Engr, NEC
ARC/Smith, G. A.
(10-750 125-00-00) (10-750 125-19-01)

NGL 39-009-032 **Pennsylvania State University** **3076**
Study and evaluation of the constant-momentum mass spectrometer for ion analysis in the D and E regions of the ionosphere
Period *Obligations*
05/28/65-11/30/75 **FY73: \$109,499** **TOTAL: \$517,932**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kendall, R. F. HQ-SG/Schmerling, E. R. 31-Atmos Sci
HQ-SG/Ott, E. J.
(10-850 879-11-00) (10-850 188-00-00)

NASA'S UNIVERSITY PROGRAM
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NGL 39-009-121 **Pennsylvania State University** **3077**
 Research in aircraft propulsion noise and its reduction

<i>Period</i>	<i>Obligations</i>	
12/20/68-02/28/74	FY73: \$50,000	TOTAL: \$310,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Reethof, G.	LARC/Hubbard, H. H.	41-Aero Engr
	LARC/Lansing, D. L.	
(23-704 501-04-01)	(23-704 501-24-01)	(23-762 132-80-01)

NGL 39-009-172 **Pennsylvania State University** **3078**
 Investigation of characteristics of a propeller operating at static conditions

<i>Period</i>	<i>Obligations</i>	
05/05/70-03/31/76	FY73: \$28,000	TOTAL: \$137,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Eisenhuth, J. J.	LARC/Heyson, H. H.	41-Aero Engr
(23-702 760-63-02)	(23-702 760-76-01)	(23-760 721-60-10)

NGR 39-009-034 **Pennsylvania State University** **3079**
 A study of low-cycle fatigue under multiaxial in-phase and out-of-phase strain cycling

<i>Period</i>	<i>Obligations</i>	
06/26/68-07/00/73	FY73:	TOTAL: \$109,349
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zamrik, S. Y.	LERC/Hirschberg, M. H.	
		47-Materials Engr
(22-760 720-00-00)	(22-740 129-03-21)	(22-760 126-00-00)

NGR 39-009-077 **Pennsylvania State University** **3080**
 Investigation of near critical and supercritical burning of fuel droplets

<i>Period</i>	<i>Obligations</i>	
08/17/66-12/31/72	FY73: \$30,400	TOTAL: \$204,410
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Faeth, G. M.	LERC/Priem, R. J.	46-Mech Engr
(22-704 502-04-25)	(22-710 128-00-00)	(10-710 128-00-00)

NGR 39-009-123 **Pennsylvania State University** **3081**
 Cycled operation of water vapor electrolysis

<i>Period</i>	<i>Obligations</i>	
12/24/68-08/14/72	FY73:	TOTAL: \$41,053
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Engel, A. J.	ARC/Wydeven, T.	43-Chem Engr
(21-770 127-00-00)	(21-970 970-22-20)	

NGR 39-009-132 **Pennsylvania State University** **3082**
 Experiment definition for the orbital plasma physics and environmental perturbation laboratory

<i>Period</i>	<i>Obligations</i>	
12/09/71-11/19/72	FY73:	TOTAL: \$1,946
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Quinn, R. G.	MSFC/Roberts, W. T.	13-Physics
(62-980 975-84-39)		

NGR 39-009-162 **Pennsylvania State University** **3083**
 Technical problems related to retrieval of uncooperative orbiting objects

<i>Period</i>	<i>Obligations</i>	
01/09/70-12/31/72	FY73:	TOTAL: \$63,365
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kaplan, M. H.	HQ-MT/Schulherr, R. M.	41-Aero Engr
	HQ-MT/Keith, E. L.	
(10-910 924-22-00)	(10-920 976-30-00)	

NGR 39-009-180 **Pennsylvania State University** **3084**
 Detection of microorganisms in their natural habitat

<i>Period</i>	<i>Obligations</i>	
06/12/70-08/31/72	FY73: \$30,000	TOTAL: \$89,972
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Casida, L. E., Jr.	HQ-SL/Young, R. S.	51-Biology
(10-840 192-55-63)		

NGR 39-009-183 **Pennsylvania State University** **3085**
 Lunar sample analysis

<i>Period</i>	<i>Obligations</i>	
02/03/71-01/31/74	FY73: \$25,800	TOTAL: \$64,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Roy, R.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 39-009-184 **Pennsylvania State University** **3086**
 Lunar sample analysis

<i>Period</i>	<i>Obligations</i>	
02/03/71-01/31/74	FY73: \$19,970	TOTAL: \$59,970
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Muan, A.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 39-009-186 **Pennsylvania State University** **3087**
 Lunar sample analysis

<i>Period</i>	<i>Obligations</i>	
02/03/71-06/01/72	FY73:	TOTAL: \$19,991
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, D. K.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 39-009-204 **Pennsylvania State University** **3088**
 Effects of hypnotic drugs

<i>Period</i>	<i>Obligations</i>	
05/22/71-09/01/73	FY73: \$18,600	TOTAL: \$85,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kales, A.	JSC/Homick, J. L.	59-Life Sci, NEC
(72-970 970-51-11)	(72-910 914-50-00)	

NGR 39-009-210 **Pennsylvania State University** **3089**
 Dynamics and control of escape and rescue from tumbling spacecraft

<i>Period</i>	<i>Obligations</i>	
06/18/71-05/31/73	FY73:	TOTAL: \$41,127
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kaplan, M. H.	HQ-MT/Wild, J. W.	41-Aero Engr
	HQ-MT/Schaefer, H.	
(10-980 981-60-10)		

NGR 39-009-218 **Pennsylvania State University** **3090**
 Study of mesospheric ionization in winter

<i>Period</i>	<i>Obligations</i>	
10/11/71-09/30/73	FY73: \$45,000	TOTAL: \$79,740
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hale, L. C.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Ott, E. J.	
(10-850 879-11-00)		

NASA'S UNIVERSITY PROGRAM **PENNSYLVANIA (Continued)**

NGR 39-009-256 **Pennsylvania State University** **3091**
Objective ride quality evaluation

Period	Obligations	
01/01/73-12/31/73	FY73: \$23,967	TOTAL: \$23,967
Prin. Invest.	NASA Tech. Officer	CASE Category
Park, W. H.	LARC/Schoonover, W. E., Jr.	46-Mech Engr
Wambold, J. C.	LARC/Conner, D. W.	
(23-701 791-91-51)	(23-704 501-29-12)	

NGR 39-009-270 **Pennsylvania State University** **3092**
Study in jet noise

Period	Obligations	
06/25/73-06/29/76	FY73: \$45,000	TOTAL: \$45,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Arndt, R. E.	LERC/Stone, J. R.	41-Aero Engr
(22-704 501-15-83)		

NGT 39-009-011 **Pennsylvania State University** **3093**
Training of graduate students in space-related science and technology

Period	Obligations	
04/11/63-08/01/72	FY73:	TOTAL: \$1,119,348
Prin. Invest.	NASA Tech. Officer	CASE Category
Howell, B. F., Jr.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGT 39-009-141 **Pennsylvania State University** **3094**
Training of graduate students in acoustics related to aeronautical & space technology

Period	Obligations	
05/31/69-08/31/74	FY73:	TOTAL: \$133,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Reethof, G.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NSR 39-009-135 **Pennsylvania State University** **3095**
Symposium in fluid mechanics & design of turbomachinery

Period	Obligations	
03/13/70-01/01/72	FY73:	TOTAL: \$12,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Lakshminarayana, B.	HQ-RP/Compitello, F.	46-Mech Engr
	HQ-RP/Levine, R. S.	
(10-710 128-00-00)	(10-760 126-00-00)	

NAS 8-26927 **Swarthmore College** **3096**
Implementation of optical techniques and experiments for large telescopic optics

Period	Obligations	
02/18/71-04/17/73	FY73:	TOTAL: \$34,988
Prin. Invest.	NASA Tech. Officer	CASE Category
Schutz, V. K.	MSFC/Rasdaill, J. L.	49-Engr, NEC
	MSFC/Reinbolt, E. J.	
(62-750 125-22-09)	(62-980 975-84-20)	

NGR 39-012-001 **Temple University** **3097**
Development of experimental and statistical methods for obtaining and interpreting micrometeorite data from space vehicles

Period	Obligations	
05/01/60-09/30/73	FY73: \$20,000	TOTAL: \$303,391
Prin. Invest.	NASA Tech. Officer	CASE Category
Bohn, J. L.	HQ-SG/Dubin, M.	11-Astronomy
	HQ-SG/Hallenbeck, D. R.	
(10-850 385-45-00)	(10-850 385-00-00)	

NGR 39-012-024 **Temple University** **3098**
Mechanisms for the effects of electric and magnetic fields on biological systems

Period	Obligations	
02/17/70-09/01/73	FY73: \$19,000	TOTAL: \$68,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Labes, M. M.	LERC/Lad, R. A.	12-Chemistry
	LERC/Fryburg, G. C.	
(22-704 502-01-02)		

NAS 2-2432 **University of Pennsylvania** **3099**
Study of plant morphogenesis under weightlessness

Period	Obligations	
09/24/64-09/15/72	FY73: \$71,977	TOTAL: \$619,358
Prin. Invest.	NASA Tech. Officer	CASE Category
Brown, A. H.	ARC/Zill, L. P.	51-Biology
Dahl, A. O.		
(21-970 970-21-62)	(21-870 883-00-00)	

NGL 39-010-001 **University of Pennsylvania** **3100**
Conversion of various forms of energy by unconventional techniques

Period	Obligations	
05/29/69-06/01/72	FY73:	TOTAL: \$1,711,112
Prin. Invest.	NASA Tech. Officer	CASE Category
Altman, M.	GSFC/	13-Physics
(10-370 183-00-00)	(10-710 123-00-00)	(10-710 120-33-10)

NGL 39-010-097 **University of Pennsylvania** **3101**
Acute acclimatization study

Period	Obligations	
08/10/71-07/31/74	FY73: \$40,000	TOTAL: \$261,299
Prin. Invest.	NASA Tech. Officer	CASE Category
Lambertsen, C. J.	JSC/Michel, E. L.	53-Other Medical
(72-970 970-51-35)	(72-910 914-51-00)	(21-770 127-00-00)

NGR 39-010-114 **University of Pennsylvania** **3102**
Nuclear reactions induced by high energy alpha particles

Period	Obligations	
10/06/70-02/01/76	FY73: \$27,000	TOTAL: \$147,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Shen, B. S.	LARC/Wilson, J. W.	39-Env Sci, NEC
(23-704 501-08-10)		

NGR 39-010-123 **University of Pennsylvania** **3103**
Study of Mars photographs

Period	Obligations	
06/22/70-05/31/73	FY73: \$32,488	TOTAL: \$65,391
Prin. Invest.	NASA Tech. Officer	CASE Category
Faul, H.	HQ-SL/Dwornik, S. E.	11-Astronomy
	HQ-SL/Allingham, J. W.	
(10-840 384-50-80)		

NASW 2291 **University of Pittsburgh** **3104**
Regional information dissemination center operation

Period	Obligations	
03/13/72-08/31/72	FY73:	TOTAL: \$135,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	HQ-KT/Carlson, J. M.	99-Multi-Discip
	HQ-KT/Holley, H. L.	
(10-250 141-93-00)		

**NASA'S UNIVERSITY PROGRAM
PENNSYLVANIA (Continued)**

NGL 39-011-013 **University of Pittsburgh** **3105**
Investigation of airglow excitation mechanisms using atomic beam techniques

Period	Obligations	
04/26/65-01/31/76	FY73: \$46,895	TOTAL: \$474,062
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fite, W. L.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-84)	(10-840 185-47-82)	(10-840 185-00-00)

NGL 39-011-030 **University of Pittsburgh** **3106**
Studies of excitation and collision deactivation of measurable A3 state of nitrogen in the Aurora and day airglow

Period	Obligations	
05/07/65-04/30/76	FY73: \$66,000	TOTAL: \$660,352
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zipf, E. C.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-84)	(10-840 185-47-82)	(10-840 185-00-00)

NGL 39-011-035 **University of Pittsburgh** **3107**
New formulas for collision amplitudes and related quantities

Period	Obligations	
02/15/69-09/01/74	FY73: \$10,000	TOTAL: \$78,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gerjuoy, E.	GSFC/Temkin, A.	13-Physics
(51-850 188-48-52)		

NGL 39-011-080 **University of Pittsburgh** **3108**
Research program in public administration

Period	Obligations	
12/06/67-11/01/72	FY73:	TOTAL: \$252,733
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mitroff, I.	HQ-SM/Allenby, R. J.	99-Multi-Discip
	HQ-SM/Bryson, R. P.	
(10-370 183-00-00)	(10-810 195-42-65)	

NGL 39-011-085 **University of Pittsburgh** **3109**
Studies relating to surfaces of moon & planets

Period	Obligations	
03/17/69-03/31/76	FY73: \$41,242	TOTAL: \$269,650
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hapke, B. W.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	
(10-810 686-10-00)	(10-810 195-42-65)	(10-810 383-09-50)

NGR 39-011-113 **University of Pittsburgh** **3110**
Helium geocorona rocket experiment

Period	Obligations	
04/14/70-09/30/73	FY73: \$150,000	TOTAL: \$585,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Donahue, T. M.	HQ-SG/Dubin, M.	31-Atmos Sci
Zipf, E. C.	HQ-SG/Ott, E.	
(10-850 879-11-00)		

NGR 39-011-129 **University of Pittsburgh** **3111**
Lunar sample analysis

Period	Obligations	
06/19/71-01/31/73	FY73:	TOTAL: \$47,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fuller, M.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 39-011-137 **University of Pittsburgh** **3112**
Dissociative recombination coefficients for planetary ionospheric ions

Period	Obligations	
07/28/71-05/31/74	FY73: \$21,683	TOTAL: \$62,636
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Biondi, M. A.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-84)		

NGR 39-011-138 **University of Pittsburgh** **3113**
Lunar sample analysis

Period	Obligations	
02/25/72-01/31/73	FY73:	TOTAL: \$26,100
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cohen, A. J.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 39-011-146 **University of Pittsburgh** **3114**
Measurement of the near ultraviolet spectrum of Venus

Period	Obligations	
05/18/72-06/30/72	FY73:	TOTAL: \$1,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hapke, B.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	
(10-840 384-50-80)		

NGR 39-011-150 **University of Pittsburgh** **3115**
Cross section calculations of astrophysical interest

Period	Obligations	
08/11/72-08/01/73	FY73: \$25,000	TOTAL: \$25,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gerjuoy, E.	HQ-SG/Sobieski, S.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-41-51)		

NGR 39-011-156 **University of Pittsburgh** **3116**
Remanent magnetism of tektites

Period	Obligations	
06/25/73-04/30/75	FY73: \$67,619	TOTAL: \$67,619
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fuller, M.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Pomeroy, J. H.	
(10-810 195-42-67)		

NGR 39-011-164 **University of Pittsburgh** **3117**
Research on chemically vapor deposited T-111 alloy deposited alloy

Period	Obligations	
06/15/73-06/14/74	FY73: \$36,649	TOTAL: \$36,649
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meier, G. H.	LERC/Stephens, J. R.	47-Materials Engr
(22-704 502-21-20)		

NGT 39-011-075 **University of Pittsburgh** **3118**
Training of predoctoral students in public administration with emphasis on policy development & administration of large scientific & technological programs

Period	Obligations	
05/26/67-08/01/72	FY73:	TOTAL: \$285,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Stone, D. C.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NASA'S UNIVERSITY PROGRAM
PENNSYLVANIA (Continued)

NSR 39-011-064 **University of Pittsburgh** **3119**
Space technology information dissemination
Period *Obligations*
01/04/67-10/14/73 FY73: **TOTAL: \$19,473**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kent, A. HQ-KT/ 99-Multi-Discip
(10-250 141-00-00)

NSR 39-011-074 **University of Pittsburgh** **3120**
Technology transfer motion picture
Period *Obligations*
02/01/67-03/01/77 FY73: **TOTAL: \$2,466**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
HQ-KT/ 99-Multi-Discip
(10-250 141-00-00)

RHODE ISLAND

NAS 1-9680 **Brown University** **3121**
Participation in the science planning for the Viking 1975 missions in the area of imaging
Period *Obligations*
03/25/70-03/31/77 FY73: \$61,300 **TOTAL: \$211,356**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mutch, T. A. LARC/Soffen, G. A. 31-Atmos Sci
(23-840 815-20-00)

NGL 40-002-015 **Brown University** **3122**
Theory of differential equations and their relationship to dynamical systems
Period *Obligations*
10/01/64-09/30/73 FY73: **TOTAL: \$469,425**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lasalle, J. P. ARC/Doolin, B. F. 21-Mathematics
Hale, J. K. (25-750 125-00-00) (10-750 125-00-00) (21-750 125-00-00)

NGL 40-002-042 **Brown University** **3123**
Properties & application of solid state materials at submillimeter frequencies
Period *Obligations*
11/08/66-10/01/72 FY73: **TOTAL: \$157,892**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Heller, G. S. GSFC/Coates, R. J. 13-Physics
(25-750 125-00-00) (51-750 125-00-00)

NGL 40-002-059 **Brown University** **3124**
Study of short-range intermolecular forces and high temperature gas properties
Period *Obligations*
06/15/67-08/01/78 FY73: \$6,000 **TOTAL: \$174,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mason, E. A. ARC/Hansen, F. C. 12-Chemistry
LARC/Meador, W. E., Jr. (21-720 112-02-22) (21-740 129-02-22)
(21-704 502-07-01)

NGL 40-002-080 **Brown University** **3125**
Studies of plasticity aspects of fracture mechanics analysis and testing
Period *Obligations*
03/21/69-03/01/74 FY73: \$36,000 **TOTAL: \$179,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mylonas, C. LERC/Misencik, J. A. 46-Mech Engr
Rice, J. R. LERC/Smith, G. T.
(22-704 502-22-03) (22-742 124-00-00)

NGR 40-002-088 **Brown University** **3126**
Analysis of Martian geologic features of earth analogs
Period *Obligations*
10/20/69-08/31/73 FY73: \$25,634 **TOTAL: \$99,816**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mutch, T. A. HQ-SL/Dwornik, S. E. 32-Geological Sci
HQ-SL/Allingham, J. W.
(10-840 384-50-80)

NGR 40-002-093 **Brown University** **3127**
Investigation of methods for improvement of efficiency of photovoltaic cells
Period *Obligations*
02/20/70-02/28/74 FY73: \$23,400 **TOTAL: \$83,900**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Loferski, J. J. LARC/Walker, G. H. 13-Physics
LARC/Conway, E. J.
(23-704 502-01-03) (10-740 129-00-00)

NGR 40-002-112 **Brown University** **3128**
Field studies of Martian analogs
Period *Obligations*
04/06/71-05/31/73 FY73: **TOTAL: \$14,905**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mutch, T. A. HQ-SL/Allingham, J. W. 32-Geological Sci
HQ-SL/Morris, E. C.
(10-840 185-50-81)

NGR 40-002-116 **Brown University** **3129**
Lunar basins processes and structure
Period *Obligations*
02/20/73-06/30/74 FY73: \$59,400 **TOTAL: \$59,400**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Head, J. W. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Allenby, R. J.
(10-810 383-09-50) (10-910 914-50-00)

NGR 40-002-123 **Brown University** **3130**
Lunar sample analysis
Period *Obligations*
05/01/73-04/30/74 FY73: \$19,400 **TOTAL: \$19,400**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rutherford, M. J. JSC/Harris, J. W. 32-Geological Sci
(72-910 914-40-00)

NGR 40-005-002 **Providence College** **3131**
Line shape theory research
Period *Obligations*
08/28/68-09/30/72 FY73: **TOTAL: \$10,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gora, E. K. HQ-ER/ 21-Mathematics
(10-680 160-00-00) (25-680 160-00-00)

NASA'S UNIVERSITY PROGRAM **RHODE ISLAND (Continued)**

NAS 5-21555 **University of Rhode Island** **3132**
Electronographic plate image recording device

Period	FY73:	Obligations	TOTAL:
09/15/70-09/01/71			\$25,110
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Nudelman, S.	GSFC/Hallam, K. L.	45-Elec Engr	
(51-750 125-00-00)	(51-850 831-00-00)		

NGR 40-004-022 **University of Rhode Island** **3133**
Solid state image sensing arrays

Period	FY73:	Obligations	TOTAL:
06/21/71-12/01/72			\$24,750
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Sadasiv, G.	HQ-ER/Lehmann, J.	45-Elec Engr	
(10-680 160-20-58)	GSFC/Drummond, R. R.		

SOUTH CAROLINA

NAS 1-11297 **Clemson University - Clemson** **3134**
Demonstration of hyperfiltration techniques applied to wash water reclamation

Period	FY73:	Obligations	TOTAL:
12/21/71-07/06/72			\$6,320
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hestor, J. C.	LARC/Hall, J. B., Jr.	39-Env Sci, NEC	
Brandon, C. A.			
(23-970 970-32-20)			

NAS 9-10494 **Clemson University - Clemson** **3135**
Study of ecological relationships

Period	FY73:	Obligations	TOTAL:
01/30/70-12/31/72			\$60,034
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Guthrie, R. K.	JSC/Ferguson, J. K.	51-Biology	
(72-770 127-49-22)	(72-770 127-00-00)		

NGR 41-001-024 **Clemson University - Clemson** **3136**
Minimum variance estimators for signal derivatives problem in instrument landing systems

Period	FY73:	Obligations	TOTAL:
11/05/69-12/01/71			\$41,452
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Snelsire, R. W.	LARC/Ballard, T. B.	21-Mathematics	
(23-750 125-00-00)	(23-760 126-61-16)		

NGR 41-001-027 **Clemson University - Clemson** **3137**
Optimization of structures to satisfy aeroelastic requirements

Period	FY73:	Obligations	TOTAL:
04/02/70-10/31/73	\$20,058		\$74,325
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Rudisill, C. S.	LARC/Doggett, R. V., Jr.	41-Aero Engr	
(23-704 501-22-04)	(23-760 136-14-02)	(23-760 136-00-00)	

NGR 41-001-031 **Clemson University - Clemson** **3138**
Short diffuser design

Period	FY73:	Obligations	TOTAL:
04/09/71-04/01/72			\$46,535
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Yang, T. T.	LERC/Grobmar, J.	41-Aero Engr	
(22-760 720-03-13)	LERC/Feehasr, A. F.		

NGR 41-001-036 **Clemson University - Clemson** **3139**
Performance evaluation for error correction codes

Period	FY73:	Obligations	TOTAL:
12/11/72-12/10/73	\$19,841		\$19,841
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Helgert, H. J.	GSFC/Lynch, T. J.	19-Phys Sci, NEC	
(51-500 311-90-53)	GSFC/Poland, W. B., Jr.		

NGR 41-006-001 **South Carolina State College** **3140**
Critical currents in superconducting thin films

Period	FY73:	Obligations	TOTAL:
06/21/73-06/30/74	\$21,175		\$21,175
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Payne, J. E.	HQ-PY/Pohly, J. G.	13-Physics	
(10-371 340-00-00)	MSFC/Urban, E. W.		

NAS 8-28660 **University of South Carolina** **3141**
Study of microwave down-converters operating in Ku band

Period	FY73:	Obligations	TOTAL:
04/19/72-09/30/73			\$20,498
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Fellers, R. G.	MSFC/Lowery, D. O.	45-Elec Engr	
(62-500 150-22-04)	MSFC/Stephens, J. K.		

NAS10-8354 **University of South Carolina** **3142**
In-line dynamic contamination monitoring of fluids for space system

Period	FY73:	Obligations	TOTAL:
06/18/73-12/31/74	\$60,000		\$60,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bonnell, R. D.	WTR/Jorolan, A. E.	43-Chem Engr	
Neuman, L.	WTR/Boggs, W. H.		
(76-980 909-64-13)			

NGL 41-002-003 **University of South Carolina** **3143**
Infrared spectra of molecules & materials of astrophysical interest

Period	FY73:	Obligations	TOTAL:
05/10/65-05/01/74	\$27,283		\$170,681
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Durig, J. R.	HQ-SL/Fellows, R. F.	31-Atmos Sci	
(10-840 185-47-84)	HQ-SL/Hipsher, H. F.		

NGR 41-002-026 **University of South Carolina** **3144**
Determination & investigation of basic combustion phenomena related to aircraft engine emitted pollutants

Period	FY73:	Obligations	TOTAL:
10/01/70-09/30/72			\$26,120
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Connor, L. N.	LARC/Jachimowski, C. J.	49-Engr, NEC	
(23-762 132-86-01)	LARC/Erickson, W. D.		
	(23-760 126-15-12)		

NASA'S UNIVERSITY PROGRAM **SOUTH CAROLINA (Continued)**

NGR 41-002-034 **University of South Carolina** **3145**
Synthesis and characterization of polyamino acids prepared under
prebiotic atmospheres from prebiotic proportions of amino acids

<i>Period</i>	<i>Obligations</i>	
05/15/72-08/31/73	FY73:	TOTAL: \$31,148
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rohlfing, D. L.	HQ-SL/Young, R. S.	12-Chemistry

(10-840 192-55-61)

NGL 42-003-007 **South Dakota State University** **3151**
Remote sensing of soils, land forms, and land use in the northern
Great Plains in preparation for ERTS applications

<i>Period</i>	<i>Obligations</i>	
07/27/70-06/30/76	FY73: \$200,000	TOTAL: \$525,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Myers, V. I.	HQ-PY/Vitale, J. A.	49-Engr, NEC

(10-371 340-00-00)

SOUTH DAKOTA

NAS 8-28060 **South Dakota School of Mines & Tech** **3146**
Data evaluation and analysis of ellipsometric measurements on
solid surface with contaminant films

<i>Period</i>	<i>Obligations</i>	
11/01/71-10/31/72	FY73:	TOTAL: \$5,600
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Weitzenkamp, L. A.	MSFC/Peters, P. N.	13-Physics

(62-740 114-03-07)

NGL 42-001-004 **South Dakota School of Mines & Tech** **3147**
Application of aerospace technology to weather modification

<i>Period</i>	<i>Obligations</i>	
06/21/68-08/01/72	FY73:	TOTAL: \$100,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Schleusener, R. A.	HQ-PY/Quinn, H. B.	39-Env Sci, NEC

(10-370 183-00-00)

NGR 42-001-006 **South Dakota School of Mines & Tech** **3148**
Comparison of terrestrial and lunar mass wasting processes

<i>Period</i>	<i>Obligations</i>	
05/05/70-08/31/73	FY73:	TOTAL: \$49,119
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rahn, P. H.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	

(10-810 383-00-00) (10-810 383-09-50) (10-810 195-42-64)

NAS 5-21774 **South Dakota State University** **3149**
Effective use of ERTS multisensor data in the Great Plains

<i>Period</i>	<i>Obligations</i>	
06/12/72-11/30/73	FY73: \$70,000	TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meyers, V. I.	GSFC/Stonesifer, G. R.	39-Env Sci, NEC

(51-680 641-14-01) (51-680 641-14-00)

NAS 9-13337 **South Dakota State University** **3150**
Evapotranspiration & thermal properties of soils related to
temperature

<i>Period</i>	<i>Obligations</i>	
03/08/73-08/31/74	FY73: \$65,421	TOTAL: \$65,421
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Myers, V. I.	JSC/Kirby, R. R.	19-Phys Sci, NEC

(72-960 948-63-82)

TENNESSEE

NAS 1-10967 **Tennessee Technological University** **3152**
Bumper-protected laminated spacecraft mainwalls

<i>Period</i>	<i>Obligations</i>	
06/23/71-09/23/72	FY73:	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kinslow, R.	LARC/Dibattista, J. D.	13-Physics
	LARC/Kinard, W. H.	

(23-742 124-09-25)

NGR 43-003-012 **Tennessee Technological University** **3153**
Investigation of difficulties associated with the use of lead telluride
& other II-VI compounds for thin film thermistors

<i>Period</i>	<i>Obligations</i>	
02/02/70-11/30/73	FY73: \$45,000	TOTAL: \$175,012
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McLennan, W. D.	LARC/Hardesty, C. A.	13-Physics
	LARC/Crouch, R. K.	

(23-680 607-06-00) (23-680 607-00-00)

NGR 43-003-015 **Tennessee Technological University** **3154**
Investigation of open-loop amplification of Reynolds number
dependent processes

<i>Period</i>	<i>Obligations</i>	
09/16/71-12/31/73	FY73: \$20,000	TOTAL: \$44,750
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Purdy, K. R.	LERC/Priem, R. J.	46-Mech Engr
	LERC/Priem, R. J.	

(22-704 502-04-25)

NAS 5-21726 **University of Tennessee - Knoxville** **3155**
ERTS-A multidisciplinary applications

<i>Period</i>	<i>Obligations</i>	
04/20/72-09/01/73	FY73: \$40,000	TOTAL: \$49,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Rehder, J. B.	GSFC/Ensor, G.	31-Atmos Sci
	GSFC/Ragland, T. M.	

(51-680 641-14-02) (51-680 641-14-00)

NAS 5-21873 **University of Tennessee - Knoxville** **3156**
Use of ERTS-A imagery to detect plant disease, nutrient
deficiencies, soil types and moisture

<i>Period</i>	<i>Obligations</i>	
09/29/72-01/01/74	FY73: \$87,700	TOTAL: \$87,700
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Parks, W. L.	GSFC/Ensor, G. J.	59-Life Sci, NEC

(51-680 641-14-01)

NASA'S UNIVERSITY PROGRAM **TENNESSEE (Continued)**

NAS 5-21875 **University of Tennessee - Knoxville** **3157**
ERTS-A study of imagery interpretation techniques in the Tennessee Valley

Period	Obligations	
09/25/72-03/01/74	FY73: \$39,620	TOTAL: \$39,620
Prin. Invest.	NASA Tech. Officer	CASE Category
Bodenheimer, R. E.	GSFC/Ensor, G. J.	39-Env Sci, NEC
Green, W. L.		

(51-680 641-14-08)

NAS 5-21882 **University of Tennessee - Knoxville** **3158**
Study of ecological applications of ERTS-A imagery

Period	Obligations	
09/29/72-03/01/74	FY73: \$37,000	TOTAL: \$37,000
Prin. Invest.	NASA Tech. Officer	CASE Category
De'Selm, H. R.	GSFC/Ensor, G. J.	39-Env Sci, NEC

(51-680 641-14-07)

NAS 8-27296 **University of Tennessee - Knoxville** **3159**
Vibration effects on strapdown navigation accuracy

Period	Obligations	
04/16/71-09/05/73	FY73: \$19,867	TOTAL: \$105,727
Prin. Invest.	NASA Tech. Officer	CASE Category
Hung, J. C.	MSFC/Parker, J. R.	42-Astro Engr
	MSFC/Berry, E. H.	

(62-830 180-17-53) (62-830 180-17-52)

NAS 8-27387 **University of Tennessee - Knoxville** **3160**
Ground wind profiles over nonuniform surfaces relative to design of aircraft and space vehicles

Period	Obligations	
06/03/71-09/01/72	FY73:	TOTAL: \$28,466
Prin. Invest.	NASA Tech. Officer	CASE Category
Frost, W.	MSFC/Fichtl, G. H.	46-Mech Engr
Maus, J. R.	MSFC/Nelson, J.	

(62-760 126-61-10)

NAS 8-28251 **University of Tennessee - Knoxville** **3161**
Study of autonomous target relative navigation

Period	Obligations	
01/14/72-11/14/72	FY73:	TOTAL: \$34,737
Prin. Invest.	NASA Tech. Officer	CASE Category
Hung, J. C.	MSFC/Ellsworth, J. D.	45-Elec Engr
	MSFC/Thompson, Z.	

(62-840 186-68-64)

NAS 8-29271 **University of Tennessee - Knoxville** **3162**
Application of image enhancement techniques to remote manipulator operations manipulator operation

Period	Obligations	
01/08/73-10/01/75	FY73: \$27,320	TOTAL: \$27,320
Prin. Invest.	NASA Tech. Officer	CASE Category
Gonzalez, R. C.	MSFC/Borelli, M. T.	45-Elec Engr
Thompson, D. D.	MSFC/Thornton, W. G.	

(62-970 970-63-20)

NAS 8-29584 **University of Tennessee - Knoxville** **3163**
Study of wind profiles over nonuniform surface relative to ground design of aircraft & space vehicles

Period	Obligations	
02/02/73-10/02/74	FY73: \$70,003	TOTAL: \$70,003
Prin. Invest.	NASA Tech. Officer	CASE Category
Frost, W.	MSFC/Fichtl, G. H.	46-Mech Engr
	MSFC/Alexander, M.	

(62-704 501-08-10)

NAS 8-29632 **University of Tennessee - Knoxville** **3164**
Teleoperator equations of motion

Period	Obligations	
05/07/73-05/07/74	FY73: \$29,861	TOTAL: \$29,861
Prin. Invest.	NASA Tech. Officer	CASE Category
Hung, J. C.	MSFC/Ellsworth, J. D.	46-Mech Engr
	MSFC/Thompson, Z.	

(62-970 970-63-20)

NGL 43-001-006 **University of Tennessee - Knoxville** **3165**
Spectroscopic studies of life shape of atmospheric gases & of absorption bands of inorganic solids

Period	Obligations	
01/07/64-09/01/74	FY73: \$75,000	TOTAL: \$1,018,628
Prin. Invest.	NASA Tech. Officer	CASE Category
Gailer, N. M.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	

(10-840 185-47-83)

NGL 43-001-021 **University of Tennessee - Knoxville** **3166**
Multidisciplinary research program in space sciences and engineering

Period	Obligations	
04/01/66-06/30/73	FY73:	TOTAL: \$1,150,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Thomas, C. O.	HQ-PY/Redding, E. R.	99-Multi-Discip
	HQ-PY/Redding, E. R.	

(10-370 183-00-00)

NGL 43-001-056 **University of Tennessee - Knoxville** **3167**
Investigations of noise characteristics and amplitude stabilization of plasma laser

Period	Obligations	
02/11/69-09/01/71	FY73:	TOTAL: \$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Shofner, F. M.	GSFC/Plotkin, H. H.	13-Physics
	GSFC/Landman	

(25-750 125-00-00) (51-750 125-00-00)

NGL 43-001-075 **University of Tennessee - Knoxville** **3168**
Engineering studies and analysis on suppression of acoustic noise from jet propulsion engines by means of model tests

Period	Obligations	
01/09/69-12/01/72	FY73: \$10,000	TOTAL: \$99,780
Prin. Invest.	NASA Tech. Officer	CASE Category
Gruschka, H. G.	LARC/Lansing, D. L.	11-Astronomy

(23-704 501-04-01) (23-704 501-24-12)

NGL 43-001-086 **University of Tennessee - Knoxville** **3169**
Flow visualization and analytical research for development of mathematical models in incompressible flow

Period	Obligations	
02/11/70-12/01/71	FY73:	TOTAL: \$108,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Braun, G. W.	LARC/Heyson, H. H.	41-Aero Engr

(23-760 721-00-00) (23-760 721-01-10)

NGR 43-001-023 **University of Tennessee - Knoxville** **3170**
Fundamental study in low-density gas dynamics

Period	Obligations	
06/23/66-10/01/72	FY73:	TOTAL: \$132,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Milligan, M. W.	LERC/Ludwig, L. P.	41-Aero Engr
	LERC/Johnson, R. L.	

(22-710 120-00-00) (22-740 129-03-24)

NASA'S UNIVERSITY PROGRAM
TENNESSEE (Continued)

NGR 43-001-102 **University of Tennessee - Knoxville** **3171**
Study of unsteady transonic flow analysis for low aspect ratio, pointed wings
Period *Obligations*
03/16/71-09/14/73 FY73: \$21,230 TOTAL: \$49,255
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Wu, J. M. LARC/Bland, S. R. 41-Aero Engr
(23-704 501-22-04)

NGR 43-001-114 **University of Tennessee - Knoxville** **3172**
Ion beam experiments related to electron temperatures and densities in the solar corona
Period *Obligations*
03/22/72-08/31/73 FY73: TOTAL: \$32,400
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Sellin, I. A. HQ-SG/Weldon, J. M. 13-Physics
HQ-SG/Oertel, G. K.
(10-850 188-38-53)

NGR 43-001-115 **University of Tennessee - Knoxville** **3173**
Development of remote sensing techniques for management of earth resources
Period *Obligations*
12/20/71-01/01/73 FY73: TOTAL: \$25,087
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shahrokh, F. MSFC/Messer, C. W. 39-Env Sci, NEC
(62-910 933-50-00)

NGR 43-001-116 **University of Tennessee - Knoxville** **3174**
Analysis of NASA management techniques
Period *Obligations*
02/14/72-07/31/73 FY73: \$9,880 TOTAL: \$29,640
Prin. Invest. *NASA Tech. Officer* *CASE Category*
James, L. B. HQ-PY/Morris, J. D. 75-Political Sci
(10-371 340-00-00)

NGR 43-001-124 **University of Tennessee - Knoxville** **3175**
Studies of sonic booms generated by high supersonic and hypersonic transports
Period *Obligations*
12/01/72-11/01/73 FY73: \$20,738 TOTAL: \$20,738
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Chaudhuri, S. N. LARC/Fetterman, D. E. 41-Aero Engr
(23-702 760-66-01)

NGR 43-001-127 **University of Tennessee - Knoxville** **3176**
Molecular seals for space flight application
Period *Obligations*
03/07/73-11/30/73 FY73: \$10,623 TOTAL: \$10,623
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Milligan, M. W. LERC/Hady, W. F. 42-Astro Engr
(22-704 502-31-51)

NGR 43-001-134 **University of Tennessee - Knoxville** **3177**
Research on fan noise caused by fluctuating lift, inlet turbulence, and distortion
Period *Obligations*
06/27/73-08/31/76 FY73: \$47,060 TOTAL: \$47,060
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lunsdaine, E. LERC/Dittmar, J. H. 41-Aero Engr
LERC/Saule, A. V.
(22-704 501-15-83)

NGR 43-001-135 **University of Tennessee - Knoxville** **3178**
Program to stimulate graduate training in the field of aeroacoustics
Period *Obligations*
06/08/73-08/31/76 FY73: \$48,840 TOTAL: \$48,840
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Maus, J. R. LERC/Dorsch, R. G. 41-Aero Engr
(22-704 501-15-83)

NCT 43-001-002 **University of Tennessee - Knoxville** **3179**
Training of graduate students in space-related science and technology
Period *Obligations*
04/06/63-08/01/72 FY73: TOTAL: \$821,306
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Smith, H. A. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NAS 3-8545 **Vanderbilt University** **3180**
Research reports
Period *Obligations*
11/01/65-11/01/76 FY73: TOTAL: \$6,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
LERC/ 49-Engr, NEC
(22-740 129-00-00)

NAS 8-28764 **Vanderbilt University** **3181**
Computer utilization prediction model
Period *Obligations*
05/04/72-10/04/72 FY73: TOTAL: \$9,200
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Bradshaw, C. MSFC/King, C. A. 21-Mathematics
MSFC/Wesson, R. L.
(62-910 933-50-00)

NAS 8-29460 **Vanderbilt University** **3182**
Study of the relationship between thermal expansion of microcircuit components and reliability
Period *Obligations*
05/21/73-05/21/74 FY73: \$10,820 TOTAL: \$10,820
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kinser, D. L. MSFC/Allen, R. V. 47-Materials Engr
MSFC/Caruso, S. V.
(62-704 502-23-51)

NAS 9-12889 **Vanderbilt University** **3183**
Skylab experiment M093
Period *Obligations*
06/09/72-01/31/74 FY73: \$51,945 TOTAL: \$74,945
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Smith, R. F. JSC/Hoffler, G. W. 59-Life Sci, NEC
(72-960 948-60-90) (72-960 961-50-00)

NGR 43-002-031 **Vanderbilt University** **3184**
Investigation of high energy radiation from a plasma focus
Period *Obligations*
01/23/69-08/31/73 FY73: \$56,734 TOTAL: \$232,830
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Roos, C. E. LARC/Hohl, F. 13-Physics
LARC/Wood, G. P.
(23-704 503-10-03) (23-740 129-00-00)

NASA'S UNIVERSITY PROGRAM **TENNESSEE (Continued)**

NGR 43-002-034 **Vanderbilt University** **3185**
Study of jet impingement on curved surfaces followed by oblique
introduction into a freestream flow

Period	FY73:	Obligations
01/27/70-01/31/73		TOTAL: \$62,475
Prin. Invest.	NASA Tech. Officer	CASE Category
Tatom, J. W.	LERC/Dietrich, D. A.	41-Aero Engr
	LERC/Luidens, R. W.	
(22-760 721-00-00)	(22-760 721-56-13)	(22-702 741-72-04)

NAS 9-11327 **Baylor University - Medical College** **3192**
Electrocardiogram electrode electrolyte solution development
program

Period	FY73:	Obligations
10/07/70-11/01/71		TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Frost, J. D.	JSC/Day, J. L.	52-Clinical Med
Kellaway, P.		
(72-960 961-50-00)		

TEXAS

NAS 9-12492 **Austin State University** **3186**
Study of Sam Houston national forest timber volume

Period	FY73:	Obligations
03/14/72-12/31/73	\$5,000	TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/Forbes, C. D.	39-Env Sci, NEC
(72-680 160-75-55)		

NAS 9-11753 **Baylor University - Medical College** **3193**
Effects of stress upon psychophysiological responses & perform-
ance following sleep deprivation

Period	FY73:	Obligations
05/11/71-08/31/72		TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Roessler, R.	JSC/Shumate, W. M.	69-Psych, NEC
(72-910 914-50-00)	(72-910 914-51-00)	(72-970 970-51-11)

NAS 9-13089 **Austin State University** **3187**
Produce and evaluate a 1971 land inventory in the Houston area
test site

Period	FY73:	Obligations
06/29/72-07/01/74	\$65,000	TOTAL: \$90,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Baker, R. D.	JSC/Dornbach, J.	72-Economics
(72-680 160-75-13)		

NAS 9-11855 **Baylor University - Medical College** **3194**
Sleep monitoring system experiment, hardware design & verifica-
tion of test unit

Period	FY73:	Obligations
06/14/71-05/01/72		TOTAL: \$99,975
Prin. Invest.	NASA Tech. Officer	CASE Category
Frost, J. D.	JSC/Delucchi, M. R.	59-Life Sci, NEC
Kellaway, P.		
(72-960 948-60-91)		

NAS 9-7280 **Baylor University - Medical College** **3188**
Cell life span

Period	FY73:	Obligations
06/26/67-09/30/74	\$45,000	TOTAL: \$271,547
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, P. C.	JSC/Alexander, W. C.	52-Clinical Med
(72-960 948-60-91)		

NAS 9-12728 **Baylor University - Medical College** **3195**
Skylab gastrointestinal analysis

Period	FY73:	Obligations
05/22/72-06/30/75	\$30,000	TOTAL: \$63,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Nichols, B. L.	JSC/Smith, M. C., Jr.	52-Clinical Med
(72-960 948-60-90)		

NAS 9-8109 **Baylor University - Medical College** **3189**
Evaluation of materials for space flight apparel

Period	FY73:	Obligations
06/10/68-12/31/73		TOTAL: \$72,271
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/Harris, E. S.	59-Life Sci, NEC
(72-910 914-50-00)		

NAS 9-13139 **Baylor University - Medical College** **3196**
Cellular response

Period	FY73:	Obligations
08/25/72-07/01/74	\$104,500	TOTAL: \$104,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Criswell, B. S.	JSC/Kimzey, S. L.	53-Other Medical
(72-970 970-51-15)		

NAS 9-10537 **Baylor University - Medical College** **3190**
Study of human adrenal control mechanisms

Period	FY73:	Obligations
04/23/70-07/31/74	\$35,000	TOTAL: \$122,590
Prin. Invest.	NASA Tech. Officer	CASE Category
Campbell, B. O.	JSC/Leach, C. S.	52-Clinical Med
(72-970 970-51-16)	(72-960 961-51-00)	(72-770 127-49-19)

NAS 9-13452 **Baylor University - Medical College** **3197**
Neurophysiological research relating performance to stress

Period	FY73:	Obligations
05/24/73-05/31/74	\$65,000	TOTAL: \$65,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Roessler, R.	JSC/Shumate, W. H.	53-Other Medical
(72-970 970-51-11)		

NAS 9-11201 **Baylor University - Medical College** **3191**
Radioisotopic study

Period	FY73:	Obligations
06/30/70-06/30/74	\$30,000	TOTAL: \$85,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, P. C.	JSC/Leach, C. S.	59-Life Sci, NEC
(72-960 948-60-90)	(72-910 914-50-00)	

NAS 9-13540 **Baylor University - Medical College** **3198**
Critical analysis of amino acid excretion patterns

Period	FY73:	Obligations
06/28/73-07/31/74	\$10,000	TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer	CASE Category
DiFerrante, N.	JSC/Leach, C. S.	59-Life Sci, NEC
(72-970 970-51-16)		

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NGR 44-003-044 Baylor University - Medical College 3199
Immune responses of the most macrophage system to humoral factors

Period	FY73:	Obligations	TOTAL:
10/20/69-04/01/73			\$59,915
Prin. Invest.	NASA Tech. Officer	CASE Category	
(72-910 914-50-00)	JSC/Kimzey, S. L.	53-Other Medical	(72-970 970-51-15)

NGR 44-003-053 Baylor University - Medical College 3200
Ion distribution in muscle and electron probe microanalysis

Period	FY73:	Obligations	TOTAL:
03/07/72-03/01/74	\$35,000		\$75,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Nichols, B. L.	JSC/Kimzey, S. L.	52-Clinical Med	
Hazlewood, C. F.			
(72-970 970-51-15)	(72-910 914-51-00)		

NGR 44-003-054 Baylor University - Medical College 3201
Periodicity of high-order neural functions

Period	FY73:	Obligations	TOTAL:
11/30/71-12/31/73			\$60,999
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kellaway, P.	JSC/Shumate, W. H.	59-Life Sci, NEC	
(72-910 914-51-00)	(72-970 970-51-11)		

NGR 44-003-057 Baylor University - Medical College 3202
New vision techniques for use in space

Period	FY73:	Obligations	TOTAL:
01/19/72-12/31/73	\$90,000		\$155,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Decker, T. A.	ARC/Haines, R. F.	51-Biology	
	ARC/Patton, R. M.		
(21-970 970-21-11)			

NGR 44-095-001 Hardin-Simmons University 3203
Study of psychophilic organisms isolated from manufacture and assembly areas of spacecraft to be used in the Viking missions

Period	FY73:	Obligations	TOTAL:
08/21/72-09/01/73	\$23,600		\$23,600
Prin. Invest.	NASA Tech. Officer	CASE Category	
Foster, T. L.	HQ-SL/Hall, L. B.	51-Biology	
	HQ-SL/Gallagher, S. G.		
(10-840 193-58-62)			

NGR 44-081-001 Houston Baptist College 3204
Research in stellar ultraviolet spectroscopy

Period	FY73:	Obligations	TOTAL:
05/20/70-08/31/73			\$98,800
Prin. Invest.	NASA Tech. Officer	CASE Category	
Modisette, J. L.	JSC/Bonner, G.	11-Astronomy	
(72-910 914-50-00)	(72-910 914-40-00)		

NGR 44-029-003 Lamar University 3205
Design and development of manned spacecraft systems

Period	FY73:	Obligations	TOTAL:
04/10/70-09/30/73			\$17,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Cherry, L. B.	JSC/Lewallen, J. M.	49-Engr, NEC	
	JSC/Eggleston, J. M.		
(72-910 914-50-00)			

NAS 9-13221 North Texas State University 3206
Early detection of disease

Period	FY73:	Obligations	TOTAL:
11/27/72-09/01/73	\$25,000		\$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
(72-970 970-51-15)	JSC/Kimzey, S. L.	52-Clinical Med	

NGR 44-033-002 Prairie View A&M College 3207
Safety analysis of structures subjected to random vibrations

Period	FY73:	Obligations	TOTAL:
09/15/69-08/31/72			\$62,300
Prin. Invest.	NASA Tech. Officer	CASE Category	
Yeh, H. Y.	JSC/Lewallen, J. M.	47-Materials Engr	
	JSC/McCutchen, D. K.		
(10-370 183-00-00)	(10-371 340-00-00)		

NGR 44-033-014 Prairie View A&M College 3208
Hydrothermal crystal growths

Period	FY73:	Obligations	TOTAL:
05/01/72-08/31/73			\$20,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Stubblefield, C. T.	HQ-PY/Pohly, J. G.	12-Chemistry	
	JSC/Williams, R. J.		
(10-371 340-00-00)			

NGR 44-033-015 Prairie View A&M College 3209
Study of spectral reflectivity from lunar surface

Period	FY73:	Obligations	TOTAL:
05/01/72-05/31/73			\$16,343
Prin. Invest.	NASA Tech. Officer	CASE Category	
Sohel, M. S.	HQ-PY/Pohly, J. G.	43-Chem Engr	
	JSC/Lewallen, J. M.		
(10-371 340-00-00)			

NGR 44-033-016 Prairie View A&M College 3210
Reliability analysis of redundant structural systems

Period	FY73:	Obligations	TOTAL:
05/01/72-08/31/73			\$16,700
Prin. Invest.	NASA Tech. Officer	CASE Category	
Yeh, H. Y.	HQ-PY/Pohly, J. G.	46-Mech Engr	
	JSC/Lewallen, J. M.		
(10-371 340-00-00)			

NAS 2-6614 Rice University 3211
Study metabolism and energetics of plants in hypogravity

Period	FY73:	Obligations	TOTAL:
09/02/71-09/01/73	\$23,500		\$43,359
Prin. Invest.	NASA Tech. Officer	CASE Category	
Ward, C. H.	ARC/Dc'Vincenza, D.	51-Biology	
(21-970 970-21-61)			

NAS 5-9317 Rice University 3212
Reduction and analysis of data from OGO-C&D ion chamber experiment

Period	FY73:	Obligations	TOTAL:
03/23/66-12/01/78			\$201,552
Prin. Invest.	NASA Tech. Officer	CASE Category	
Anderson, H.	GSFC/Meese, K. J.	32-Gelological Sci	
(51-850 841-00-00)	(51-850 385-50-00)		

NASA'S UNIVERSITY PROGRAM
TEXAS (Continued)

NAS 6-1667 **Rice University** **3213**
Investigation into relationship between field aligned currents and auroral particle fluxes

Period	Obligations
07/23/69-06/30/73	FY73: \$120,000 TOTAL: \$1,097,869
Prin. Invest.	NASA Tech. Officer CASE Category
Freeman, J. W.	WS/Gray, J. W. 11-Astronomy
Anderson, H. R.	WS/West, W. W.
(53-850 879-10-00)	

NAS 9-5884 **Rice University** **3214**
Charged particle lunar environment experiment for ALSEP

Period	Obligations
06/22/66-08/05/73	FY73: \$23,543 TOTAL: \$1,050,989
Prin. Invest.	NASA Tech. Officer CASE Category
Reasoner, D. L.	JSC/Eichelman, W. F. 19-Phys Sci, NEC
(72-910 914-40-00)	(72-960 942-92-00)

NAS 9-5911 **Rice University** **3215**
Suprathermal ion detector experiment for ALSEP

Period	Obligations
04/28/66-12/31/73	FY73: \$100,000 TOTAL: \$4,974,000
Prin. Invest.	NASA Tech. Officer CASE Category
Freeman, J. W.	JSC/Eichelman, W. F. 13-Physics
(72-910 914-40-00)	(72-960 942-92-00)

NAS 9-10428 **Rice University** **3216**
Scientific support of Apollo infrared scanning radiometer

Period	Obligations
02/26/70-01/31/74	FY73: TOTAL: \$215,000
Prin. Invest.	NASA Tech. Officer CASE Category
Low, F.	JSC/Eichelman, W. F. 39-Env Sci, NEC
(72-910 914-49-00)	

NAS 9-11827 **Rice University** **3217**
Adsorption bed models used in simulation of atmospheric control systems

Period	Obligations
05/10/71-06/30/74	FY73: \$13,000 TOTAL: \$37,865
Prin. Invest.	NASA Tech. Officer CASE Category
Davis, S. H.	JSC/Jaax, J. R. 43-Chem Engr
(72-970 970-52-21)	(72-910 914-52-00) (72-770 127-53-40)

NAS 9-12776 **Rice University** **3218**
Applied mathematics in classification analysis

Period	Obligations
05/26/72-05/31/74	FY73: \$79,770 TOTAL: \$179,420
Prin. Invest.	NASA Tech. Officer CASE Category
Lynn, S.	JSC/Baker, K. 21-Mathematics
(72-680 160-75-98)	

NAS 9-12912 **Rice University** **3219**
Germ free plant study

Period	Obligations
06/19/72-05/31/74	FY73: TOTAL: \$20,000
Prin. Invest.	NASA Tech. Officer CASE Category
Ward, C. H.	JSC/Walkinshaw, C. H. 51-Biology
(72-910 914-50-00)	JSC/Wooley, B. C.

NGL 44-006-001 **Rice University** **3220**
Research on physics of solid materials including study of basic laws governing behavior of solids at high temperatures

Period	Obligations
05/01/72-06/30/76	FY73: \$200,000 TOTAL: \$4,150,000
Prin. Invest.	NASA Tech. Officer CASE Category
Rorschach, H. E.	LERC/Lad, R. A. 47-Materials Engr
(22-704 502-01-04)	(10-740 129-00-00) (22-740 129-03-42)

NGL 44-006-012 **Rice University** **3221**
Laboratory development of solar wind heavy-ion mass spectrometer

Period	Obligations
06/27/64-06/01/74	FY73: \$130,000 TOTAL: \$1,099,736
Prin. Invest.	NASA Tech. Officer CASE Category
Stebbins, R. F.	HQ-SG/Kavanagh, L. D. 13-Physics
(10-850 188-36-55)	HQ-SG/Schmerling, E. R.

NGL 44-006-033 **Rice University** **3222**
Multidisciplinary space related research

Period	Obligations
01/12/66-08/01/72	FY73: TOTAL: \$1,000,000
Prin. Invest.	NASA Tech. Officer CASE Category
Stebbins, R. F.	HQ-PY/Redding, E. R. 99-Multi-Discip
(10-370 183-00-00)	HQ-PY/Quinn, H. B.

NGL 44-006-127 **Rice University** **3223**
Lunar fines, their origin, evolution, and interaction with solar wind and cosmic rays

Period	Obligations
02/16/71-01/31/76	FY73: \$33,640 TOTAL: \$296,640
Prin. Invest.	NASA Tech. Officer CASE Category
Heymann, D.	JSC/Harris, J. W. 32-Geological Sci
(72-910 914-40-00)	

NGR 44-006-137 **Rice University** **3224**
Analysis of data on the magnetotail and solar wind

Period	Obligations
12/29/70-05/31/74	FY73: \$99,069 TOTAL: \$120,084
Prin. Invest.	NASA Tech. Officer CASE Category
Dessler, A. J.	HQ-SG/Kavanagh, L. D., Jr. 13-Physics
(10-850 385-36-00)	HQ-SG/Schmerling, E. R.

NGR 44-006-142 **Rice University** **3225**
Lunar sample analysis

Period	Obligations
05/26/71-01/31/74	FY73: \$35,000 TOTAL: \$82,738
Prin. Invest.	NASA Tech. Officer CASE Category
Powell, B. N.	JSC/Harris, J. W. 32-Geological Sci
(72-910 914-40-00)	

NGR 44-006-144 **Rice University** **3226**
Lunar sample analysis

Period	Obligations
02/15/72-06/30/73	FY73: TOTAL: \$29,020
Prin. Invest.	NASA Tech. Officer CASE Category
Adams, J. A.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NASA'S UNIVERSITY PROGRAM TEXAS (Continued)

NGR 44-006-148 **Rice University** **3227**
Application of holographic interferometry and optical data processing to materials science

Period	Obligations	
12/06/71-12/04/72	FY73:	TOTAL: \$16,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Rabson, T. A.	JSC/Youngblood, J. L.	47-Materials Engr
Tittel, F. K.		
(72-980 908-42-01)		

NGR 44-006-156 **Rice University** **3228**
Photoionization of atoms in metastable states

Period	Obligations	
06/21/72-06/30/74	FY73: \$31,769	TOTAL: \$56,749
Prin. Invest.	NASA Tech. Officer	CASE Category
Stebbing, R. F.	JSC/Hudson, R. D.	13-Physics
(72-840 185-47-32)		

NGR 44-006-169 **Rice University** **3229**
Development of ultraviolet lasers

Period	Obligations	
02/01/73-01/31/74	FY73: \$25,000	TOTAL: \$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Walters, G. K.	JSC/Hudson, R. D.	13-Physics
(72-840 185-47-32)		

NGR 44-006-170 **Rice University** **3230**
Direct measurement of stress intensity factors

Period	Obligations	
01/15/73-10/15/73	FY73: \$5,000	TOTAL: \$5,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Tittel, F. K.	JSC/Youngblood, J. L.	45-Elec Engr
(72-920 986-15-00)		

NGT 44-006-003 **Rice University** **3231**
Training of graduate students in space-related science and technology

Period	Obligations	
04/01/62-08/01/72	FY73:	TOTAL: \$1,359,552
Prin. Invest.	NASA Tech. Officer	CASE Category
Gordon, W. E.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NAS 1-11869 **Southern Methodist University** **3232**
Study of physical phenomena related to crystal growth in space environment

Period	Obligations	
07/21/72-10/01/72	FY73: \$7,400	TOTAL: \$7,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Chu, T. L.	LARC/Fripp, A. L.	47-Materials Engr
	LARC/Ayers, W. G.	
(23-830 490-02-02)	(23-980 975-72-48)	(23-740 114-03-58)

NGL 44-007-006 **Southern Methodist University** **3233**
Multidisciplinary research in space-related science and technology

Period	Obligations	
03/26/65-12/31/73	FY73:	TOTAL: \$600,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Denton, J. C.	HQ-PY/Redding, E. R.	99-Multi-Discip
(10-370 183-00-00)		

NGL 44-007-042 **Southern Methodist University** **3234**
Boronarsenide and phosphide for high temperature and luminescent devices

Period	Obligations	
04/10/69-06/01/73	FY73:	TOTAL: \$118,805
Prin. Invest.	NASA Tech. Officer	CASE Category
Chu, T. L.	LARC/Breckenridge, R. A.	47-Materials Engr
	LARC/Robertson, J. B.	
(23-750 125-00-00)	(25-750 125-00-00)	(23-750 115-25-01)

NGR 44-007-028 **Southern Methodist University** **3235**
Efficient estimation of distribution for extreme observations in sample and non-sample cases

Period	Obligations	
03/12/68-12/31/73	FY73: \$2,505	TOTAL: \$28,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Walsh, J. E.	HQ-RW/	21-Mathematics
(10-740 129-00-00)		

NGR 44-007-037 **Southern Methodist University** **3236**
Digital phase locked techniques for aerospace communications

Period	Obligations	
03/18/69-08/01/71	FY73:	TOTAL: \$39,615
Prin. Invest.	NASA Tech. Officer	CASE Category
Gupta, S. C.	GSFC/Brown, J. P.	45-Elec Engr
(51-680 160-00-00)		

NGR 44-007-049 **Southern Methodist University** **3237**
Digital communications for aircraft

Period	Obligations	
11/24/70-08/31/73	FY73:	TOTAL: \$58,893
Prin. Invest.	NASA Tech. Officer	CASE Category
Gupta, S. C.	LARC/Bracalente, E. M.	45-Elec Engr
	LARC/Painter, J. H.	
(23-620 636-18-71)	(23-750 125-19-09)	

NGR 44-007-052 **Southern Methodist University** **3238**
Gallium nitride opto-electronic devices

Period	Obligations	
08/11/71-08/31/72	FY73:	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Chu, T. L.	LARC/Breckenridge, R. A.	47-Materials Engr
	LARC/Crouch, R. K.	
(23-750 115-25-01)		

NGT 44-007-002 **Southern Methodist University** **3239**
Training of predoctoral graduate students in space-related sciences & technology

Period	Obligations	
03/12/64-08/01/72	FY73:	TOTAL: \$247,901
Prin. Invest.	NASA Tech. Officer	CASE Category
Albritton, C. C., Jr.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

NGR 44-073-003 **Texas A&I University** **3240**
Statistical approach to pattern recognition

Period	Obligations	
12/14/70-12/01/71	FY73:	TOTAL: \$15,840
Prin. Invest.	NASA Tech. Officer	CASE Category
Speed, F. M.	JSC/Johnston, D. A.	19-Phys Sci, NEC
	JSC/Lewallen, J. M.	
(72-990 997-00-00)		

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NAS 1-11276 **Texas A&M University** **3241**
Geoscience specifications for orbital imaging radar

Period	Obligations	
12/27/71-12/26/72	FY73: TOTAL: \$10,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rouse, J. W., Jr.	LARC/Walsh, T. M.	45-Elec Engr
	LARC/Howell, J. E.	

(23-620 630-52-00)

NAS 5-11911 **Texas A&M University** **3242**
Automatic system for computer program documentation

Period	Obligations	
04/04/72-01/07/73	FY73: TOTAL: \$41,142	
Prin. Invest.	NASA Tech. Officer	CASE Category
Simmons, D. B.	GSFC/Damon, E. P.	21-Mathematics
Elliot, R. W.	GSFC/Gridley, D. H.	

Colunga, D.
(51-500 150-22-12)

NAS 5-11988 **Texas A&M University** **3243**
Implementation of design phase of an automatic system for computer program documentation

Period	Obligations	
06/06/73-06/05/74	FY73: \$160,537 TOTAL: \$160,537	
Prin. Invest.	NASA Tech. Officer	CASE Category
Simmons, D. B.	GSFC/Damon, E. P.	21-Mathematics

(51-500 310-40-25)

NAS 5-21857 **Texas A&M University** **3244**
ERTS-A data user investigation of monitor vernal advancement and retrogradation /green wave effect/ of national vegetation in Great Plains corridor

Period	Obligations	
09/27/72-11/01/74	FY73: \$60,216 TOTAL: \$60,216	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rouse, J. W., Jr.	GSFC/Stonesifer, G. R.	59-Life Sci, NEC

Haas, R. H.
Schell, J. A.
(51-680 641-14-01)

NAS 8-26379 **Texas A&M University** **3245**
Development of techniques to control dislocations created during the fabrication of LSI alloys

Period	Obligations	
08/27/70-10/01/73	FY73: \$33,000 TOTAL: \$98,265	
Prin. Invest.	NASA Tech. Officer	CASE Category
Porter, W. A.	MSFC/Nowakowski, M. F.	13-Physics
	MSFC/Rull, R.	

(62-704 502-23-51) (62-950 953-37-00)

NAS 8-26751 **Texas A&M University** **3246**
Atmospheric variability and vertical motions

Period	Obligations	
01/15/71-02/28/74	FY73: \$9,997 TOTAL: \$42,404	
Prin. Invest.	NASA Tech. Officer	CASE Category
Scoggins, J. R.	MSFC/Vaughn, W. W.	31-Atmos Sci
	MSFC/Turner, R. E.	

(62-680 160-44-69) (62-760 126-00-00) (62-763 133-61-10)

NAS 8-29582 **Texas A&M University** **3247**
Feasibility of aircraft platforms to measure building wakes for aeronautical safety applications

Period	Obligations	
02/21/73-02/21/74	FY73: \$19,988 TOTAL: \$19,988	
Prin. Invest.	NASA Tech. Officer	CASE Category
Brundidge, K. C.	MSFC/Fichtl, G. H.	31-Atmos Sci
	MSFC/Camp, D. W.	

(62-704 501-08-10)

NAS 9-9053 **Texas A&M University** **3248**
Study on radiation effect control, eyes skin

Period	Obligations	
12/30/68-04/30/74	FY73: \$80,000 TOTAL: \$439,605	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hightower, D.	JSC/Hoffman, R. A.	52-Clinical Med
(72-970 970-51-63)	(72-910 914-51-00)	(72-910 914-50-00)

NAS 9-9285 **Texas A&M University** **3249**
Study of noise suppression system

Period	Obligations	
03/17/69-02/28/74	FY73: TOTAL: \$75,296	
Prin. Invest.	NASA Tech. Officer	CASE Category
Haden, C. R.	JSC/Arndt, G. D.	45-Elec Engr
(72-910 914-50-00)	(72-910 921-30-00)	

NAS 9-9766 **Texas A&M University** **3250**
Wind tunnel testing and analysis of advanced shuttle vehicle configuration

Period	Obligations	
06/30/69-10/31/73	FY73: \$50,000 TOTAL: \$397,678	
Prin. Invest.	NASA Tech. Officer	CASE Category
Lowy, S. H.	JSC/Moseley, W. C., Jr.	41-Aero Engr
(72-920 982-42-00)	(72-920 986-15-00)	(72-920 976-10-00)

NAS 9-11155 **Texas A&M University** **3251**
Aircraft scatterometry program data analysis

Period	Obligations	
06/30/70-01/31/73	FY73: TOTAL: \$43,075	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rouse, J. W.	JSC/Potter, A. E.	39-Env Sci, NEC
(72-680 640-00-00)	(72-680 160-75-56)	

NAS 9-11303 **Texas A&M University** **3252**
Study of shuttle vehicle elasticity

Period	Obligations	
09/09/70-04/09/74	FY73: TOTAL: \$265,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Cavin, R. K., III	JSC/Moseley, W. C., Jr.	41-Aero Engr
(72-920 982-42-00)	(72-742 124-00-00)	

NAS 9-11658 **Texas A&M University** **3253**
Analytical study of striated nozzle flow with small radius of curvature ratio throats

Period	Obligations	
04/16/71-07/01/72	FY73: TOTAL: \$14,086	
Prin. Invest.	NASA Tech. Officer	CASE Category
Norton, D. J.	JSC/Jenkins, L. W.	41-Aero Engr
(72-710 731-13-50)		

NASA'S UNIVERSITY PROGRAM
TEXAS (Continued)

NAS 9-11931 **Texas A&M University** **3254**
Effect of space flight environment on enzyme patterns in bacteria
Period *Obligations*
06/11/71-09/14/73 **FY73:** **TOTAL: \$80,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Foster, B. G. JSC/Taylor, G. R. 51-Biology
Prescott, J. M.
(72-910 914-50-00)

NAS 9-12050 **Texas A&M University** **3255**
Effect of lunar materials upon terrestrial vegetation
Period *Obligations*
06/25/71-06/30/73 **FY73:** **TOTAL: \$70,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Halliwell, R. S. JSC/Walkinshaw, C. H. 39-Env Sci, NEC
(72-910 914-51-00) (72-870 189-54-63)

NAS 9-12434 **Texas A&M University** **3256**
Compression of rehydratable vegetables & cereals
Period *Obligations*
01/19/72-10/31/73 **FY73:** **TOTAL: \$65,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Burns, E. E. JSC/Heidelbaugh, N. D. 59-Life Sci, NEC
(72-970 970-51-14) (72-910 914-51-00)

NAS 9-12586 **Texas A&M University** **3257**
Evaluation of radioisotope trace & activation analysis techniques
Period *Obligations*
03/08/72-04/01/73 **FY73:** **TOTAL: \$20,768**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Smathers, J. B. JSC/Richmond, R. G. 13-Physics
Kuykendall, N. E., Jr. JSC/Ehlers, H. K.
Fite, L. E.
(72-980 908-44-13)

NAS 9-12671 **Texas A&M University** **3258**
Cytological studies of lunar treated tissue cultures
Period *Obligations*
05/23/72-03/01/73 **FY73:** **TOTAL: \$10,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Halliwell, R. S. JSC/Walkinshaw, C. H. 51-Biology
JSC/Wooley, B. C.
(72-910 914-51-00)

NAS 9-13349 **Texas A&M University** **3259**
Oceanographic research from a survey vessel
Period *Obligations*
04/10/73-06/30/73 **FY73:** **TOTAL: \$14,900**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Burnett, N. C. JSC/Mc Pherson, T. M. 33-Oceanography
Allison, R. C.
(72-680 641-14-07)

NAS 9-13374 **Texas A&M University** **3260**
Analysis of lunar-treated plants by activation analysis technique
Period *Obligations*
03/09/73-03/15/74 **FY73:** **TOTAL: \$10,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kuykendall, W. E., Jr. JSC/Walkinshaw, C. H. 51-Biology
(72-960 961-51-00)

NAS 9-13545 **Texas A&M University** **3261**
Operation of agricultural test fields for study of stressed crops by remote sensing
Period *Obligations*
06/01/73-06/30/74 **FY73:** **TOTAL: \$17,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Toler, R. W. JSC/Potter, A. E. 32-Geological Sci
(72-680 641-14-07)

NGL 44-001-001 **Texas A&M University** **3262**
Interdisciplinary space oriented research in physical, life and engineering sciences
Period *Obligations*
02/01/62-01/01/75 **FY73:** **TOTAL: \$1,265,564**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rouse, J. W. HQ-PY/Vitale, J. A. 39-Env Sci, NEC
(10-371 340-00-00) (10-370 183-00-00)

NGL 44-001-044 **Texas A&M University** **3263**
The nonlinear static and dynamic analysis of shells of revolution with asymmetrical stiffness properties
Period *Obligations*
01/24/67-12/01/72 **FY73:** **TOTAL: \$238,328**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Stricklin, J. A. JSC/Stebbins, F. J. 13-Physics
(72-742 124-00-00) (72-910 914-50-00)

NGR 44-001-081 **Texas A&M University** **3264**
Relationships between stratospheric clear air turbulence and synoptic meteorological parameters
Period *Obligations*
02/14/69-06/30/73 **FY73:** **TOTAL: \$190,842**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Scoggins, J. R. FRC/Ehernberger, L. J. 31-Atmos Sci
(24-760 720-52-10) (24-760 126-00-00)

NGR 44-001-095 **Texas A&M University** **3265**
Effects of series truncation on estimates and the transformation of errors
Period *Obligations*
08/11/69-06/01/72 **FY73:** **TOTAL: \$39,242**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hartley, H. O. JSC/Johnston, D. 99-Multi-Discip
JSC/Lewallen, J. M.
(72-990 997-00-00)

NGR 44-001-106 **Texas A&M University** **3266**
Hypervelocity impact effects
Period *Obligations*
07/22/70-09/01/72 **FY73:** **TOTAL: \$43,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rodenberger, C. A. JSC/Cour-Palais, B. G. 49-Engr, NEC
(72-910 914-50-00)

NGR 44-001-117 **Texas A&M University** **3267**
Radiative transfer in realistic planetary atmospheres
Period *Obligations*
07/19/71-09/30/73 **FY73:** **TOTAL: \$66,420**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Plass, G. M. HQ-SL/Fellows, R. F. 31-Atmos Sci
Kattawar, G. W. HQ-SL/Hipsher, H. F.
(10-840 185-47-81)

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NGR 44-001-125	Texas A&M University		3268	NAS 5-21720	Texas Technical University		3275
	Study remote sensing of water quality				Study of dynamics of Playa Lakes in the Texas high plains		
	<i>Period</i>	<i>Obligations</i>			<i>Period</i>	<i>Obligations</i>	
	08/09/71-03/31/73	FY73: TOTAL: \$20,736			04/21/72-07/01/74	FY73: \$34,871 TOTAL: \$49,871	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Plass, G. N.	ARC/Arvesen, J. C.	39-Env Sci, NEC		Miller, W. D.	GSFC/Fihelly, A. W.	39-Env Sci, NEC
	Kattawar, G. W.	ARC/Larson, H. K.			(51-680 641-14-04)	(51-680 641-14-00)	
	(21-680 160-44-60)						
NGR 44-001-149	Texas A&M University		3269	NAS 9-11162	Texas Technical University		3276
	Fatigue strength of multilayered advance fiber composites				Insulated ECG electrodes		
	<i>Period</i>	<i>Obligations</i>			<i>Period</i>	<i>Obligations</i>	
	06/18/73-06/17/74	FY73: \$10,000 TOTAL: \$10,000			06/29/70-06/01/74	FY73: \$15,000 TOTAL: \$39,993	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Thornton, H. R.	LERC/Chamis, C. C.	41-Aero Engr		Portnoy, W. M.	JSC/Day, J. L.	45-Elec Engr
	Kozik, T. J.	LERC/Sullivan, T. L.			(72-970 970-53-30)	(72-960 961-53-00)	(72-960 961-21-00)
	(22-704 501-22-03)						
NGR 44-001-152	Texas A&M University		3270	NAS 9-12775	Texas Technical University		3277
	Magnetic studies of meteorites				Applied mathematics classification analysis		
	<i>Period</i>	<i>Obligations</i>			<i>Period</i>	<i>Obligations</i>	
	06/20/73-06/30/75	FY73: \$43,310 TOTAL: \$43,310			05/23/72-06/01/73	FY73: TOTAL: \$49,040	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Rowe, M. W.	HQ-SM/Bryson, R. P.	32-Geological Sci		Odell, P. L.	JSC/MacDonald, R. B.	21-Mathematics
		HQ-SM/Allenby, R. J.			(72-910 914-50-00)	JSC/Baker, K.	
	(10-810 195-42-67)						
NGR 44-009-025	Texas Christian University		3271	NGR 44-011-050	Texas Technical University		3278
	Collaborative research on contextual category formation and recognition				Analysis of multispectral earth observation data		
	<i>Period</i>	<i>Obligations</i>			<i>Period</i>	<i>Obligations</i>	
	08/04/69-10/01/72	FY73: TOTAL: \$57,898			06/27/72-08/31/73	FY73: TOTAL: \$19,200	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Evans, S.	ARC/Huff, E.	69-Psych, NEC		Coherty, W. A.	JSC/Eandi, B. K.	21-Mathematics
	(21-740 129-04-21)	ARC/Patton, M.			(72-910 914-50-00)		
	(21-750 125-00-00)	(21-740 129-00-00)					
NGR 44-009-030	Texas Christian University		3272	NGT 44-011-001	Texas Technical University		3279
	Normative studies of personality measures related to adaptation to long duration isolation confinement				Training of graduate students in space-related science and technology		
	<i>Period</i>	<i>Obligations</i>			<i>Period</i>	<i>Obligations</i>	
	06/21/72-12/01/72	FY73: TOTAL: \$25,000			03/25/63-08/01/72	FY73: TOTAL: \$524,382	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Sells, S. B.	JSC/Fedderson, W. E.	62-Social Aspects		Graves, L.	HQ-PY/Carter, C. H.	99-Multi-Discip
	(72-910 914-51-00)				(10-370 181-00-00)		
NAS 9-8795	Texas Southern University		3273	NAS 2-6434	Texas Woman's University		3280
	Minority manpower resources study				Bone density report		
	<i>Period</i>	<i>Obligations</i>			<i>Period</i>	<i>Obligations</i>	
	08/01/66-08/01/77	FY73: TOTAL: \$5,000			04/27/71-09/01/71	FY73: TOTAL: \$4,826	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
		JSC/	76-Sociology		Mack, P. B.	ARC/Hewitt, J. E.	59-Life Sci, NEC
	(72-030 039-00-00)				(21-870 189-73-62)	ARC/Dunlap, W. A.	
						(21-870 883-00-00)	
NAS 1-9506	Texas Technical University		3274	NAS 9-9755	Texas Woman's University		3281
	Investigation of the catalytic removal of ammonia and nitrogen oxides from space-cabin atmospheres				Evaluation of flight foods under hypokinetic conditions		
	<i>Period</i>	<i>Obligations</i>			<i>Period</i>	<i>Obligations</i>	
	08/28/69-06/01/72	FY73: TOTAL: \$75,384			06/23/69-08/01/72	FY73: TOTAL: \$94,341	
	<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>		<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	Gully, A. J.	LARC/Wilson, C.	12-Chemistry		Mack, P. B.	JSC/Rambaut, P. C.	59-Life Sci, NEC
	(23-770 127-00-00)	(23-770 127-53-41)			(72-960 948-60-00)	JSC/Smith, M. C.	
					(72-960 948-60-90)	(72-770 127-49-03)	

NASA'S UNIVERSITY PROGRAM
TEXAS (Continued)

NGR 44-017-004 **Trinity University** **3282**
Maintenance of high effort responses despite availability of low effort alternative

<i>Period</i>	<i>Obligations</i>	
04/13/72-07/31/73	FY73:	TOTAL: \$35,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Thach, J. S.	ARC/Dauntun, N. G.	61-Biol Aspects
	ARC/Patton, R. M.	

(21-970 970-21-53)

NAS 1-9685 **University of Houston** **3283**
Participation in the science planning for the Viking 1975 missions in the area of molecular analysis

<i>Period</i>	<i>Obligations</i>	
03/17/70-03/31/77	FY73: \$83,446	TOTAL: \$230,588
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Oro, J.	LARC/Soffen, G. A.	13-Physics

(23-840 815-20-00)

NAS 2-7435 **University of Houston** **3284**
Biochemical research & services

<i>Period</i>	<i>Obligations</i>	
01/29/73-02/28/74	FY73: \$10,000	TOTAL: \$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Oro, J.	ARC/Miquel, J.	51-Biology

(21-970 970-21-63)

NAS 9-9104 **University of Houston** **3285**
History of the Apollo spacecraft

<i>Period</i>	<i>Obligations</i>	
03/18/69-06/30/73	FY73: \$50,760	TOTAL: \$179,265
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Swenson, L. S.	JSC/Grimwood, J. M.	73-History

(72-910 914-80-00)

NAS 9-9270 **University of Houston** **3286**
Parametric analysis in electrical engineering

<i>Period</i>	<i>Obligations</i>	
03/17/69-09/01/71	FY73:	TOTAL: \$46,212
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Shehadeh, N. M.	JSC/Moorehead, R. W.	45-Elec Engr
Simpson, R. S.		

(72-910 921-30-00) (72-910 914-50-00)

NAS 9-9851 **University of Houston** **3287**
Extended range communication equipment

<i>Period</i>	<i>Obligations</i>	
05/27/69-12/01/71	FY73:	TOTAL: \$81,059
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Hayre, H. S.	JSC/Eggers, D. S.	45-Elec Engr

(72-980 908-20-00) (72-910 914-50-00)

NAS 9-10947 **University of Houston** **3288**
Germ-free plants & cultures

<i>Period</i>	<i>Obligations</i>	
06/19/70-12/31/72	FY73:	TOTAL: \$94,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Venketeswaran, S.	JSC/Walkinshaw, C. H.	53-Other Medical
	JSC/Wooley, B. C.	

(72-910 914-50-00) (72-870 189-00-00)

NAS 9-11276 **University of Houston** **3289**
Management study of OART

<i>Period</i>	<i>Obligations</i>	
08/13/70-07/01/71	FY73:	TOTAL: \$41,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zuckerman, J. V.	JSC/Huntoon, H. H.	99-Multi-Discip

(72-705 130-00-00)

NAS 9-11676 **University of Houston** **3290**
Characterization of heat transfer in nutrient materials

<i>Period</i>	<i>Obligations</i>	
04/28/71-04/01/74	FY73: \$24,980	TOTAL: \$49,960
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Cox, J. E.	JSC/Heidelbaugh, N. D.	59-Life Sci, NEC
Witte, L. C.		

(72-970 970-52-24) (72-770 127-49-02)

NAS 9-11845 **University of Houston** **3291**
Data encoding study for space communication system

<i>Period</i>	<i>Obligations</i>	
06/14/71-07/01/73	FY73:	TOTAL: \$47,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Simpson, R. S.	JSC/Arndt, G. D.	45-Elec Engr

(72-910 914-50-00)

NAS 9-11885 **University of Houston** **3292**
Full pressure suit capability

<i>Period</i>	<i>Obligations</i>	
06/15/71-10/30/73	FY73:	TOTAL: \$28,991
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Sheer, D. H.	JSC/Jackson, J. T.	53-Other Medical

(72-910 914-50-00) (72-910 914-51-00) (72-980 975-60-02)

NAS 9-12093 **University of Houston** **3293**
Applications of gas chromatography & mass spectrometry to disease detection

<i>Period</i>	<i>Obligations</i>	
06/24/71-01/01/73	FY73:	TOTAL: \$89,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zlatkis, A.	JSC/Schneider, H. J.	52-Clinical Med
Flory, D. A.		

(72-770 127-49-20) (72-910 914-51-00)

NAS 9-12217 **University of Houston** **3294**
Technical management study

<i>Period</i>	<i>Obligations</i>	
09/15/71-07/31/72	FY73:	TOTAL: \$75,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Zuckerman, J. V.	JSC/Cotton, P.	99-Multi-Discip

(72-705 130-06-01) (72-705 130-00-00)

NAS 9-12646 **University of Houston** **3295**
Application of remote sensing

<i>Period</i>	<i>Obligations</i>	
04/13/72-01/31/74	FY73:	TOTAL: \$49,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Graff, W. J.	JSC/Amesbury, D. A.	44-Civil Engr
Rogers, J. R.	JSC/Erb, R. B.	

(72-680 160-75-55)

NASA'S UNIVERSITY PROGRAM
TEXAS (Continued)

NAS 9-12650 **University of Houston** **3296**
Analysis of management of lunar science investigations at MSC
Period *Obligations*
03/30/72-03/31/74 **FY73:** **TOTAL: \$96,522**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Holland, W. E. JSC/Hudson, R. O. 79-Soc Sci, NEC
JSC/Buckel, C. A.
(72-910 914-50-00)

NAS 9-12692 **University of Houston** **3297**
Seminars at lunar science institute
Period *Obligations*
04/11/72-12/31/73 **FY73: \$10,000** **TOTAL: \$73,476**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Eisner, M. E. JSC/Henize, K. G. 59-Life Sci, NEC
(72-950 951-16-00)

NAS 9-12777 **University of Houston** **3298**
Applied mathematics in classification analysis
Period *Obligations*
05/24/72-04/30/74 **FY73: \$68,900** **TOTAL: \$118,350**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Decell, H. JSC/Baker, K. 21-Mathematics
(72-680 160-75-98)

NAS 9-13068 **University of Houston** **3299**
Profile of volatile metabolites in human urine
Period *Obligations*
06/30/72-12/01/72 **FY73:** **TOTAL: \$17,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Zlatkis, A. JSC/Schneider, H. J. 52-Clinical Med
(72-970 970-51-25)

NAS 9-13134 **University of Houston** **3300**
Stability of drugs under inflight medical support system
Period *Obligations*
09/01/72-09/01/73 **FY73: \$25,726** **TOTAL: \$25,726**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gupta, V. D. JSC/Chassey, C. E. 53-Other Medical
(72-960 961-50-00)

NAS 9-13262 **University of Houston** **3301**
Development of pine seedling/tissue culture system
Period *Obligations*
01/15/73-01/14/76 **FY73: \$50,000** **TOTAL: \$50,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Venkateswaran, S. JSC/Walkinshaw, C. H. 51-Biology
Cowles, J. R.
(72-970 970-51-62)

NAS 9-13306 **University of Houston** **3302**
Electron microscopy analysis of n.dubius larvae
Period *Obligations*
03/15/73-05/15/74 **FY73: \$9,000** **TOTAL: \$9,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Clark, W. H., Jr. JSC/Taylor, G. R. 51-Biology
(72-910 914-50-00)

NAS 9-13457 **University of Houston** **3303**
Application of gas chromatography for detection of diseases
Period *Obligations*
05/17/73-08/26/74 **FY73: \$40,000** **TOTAL: \$40,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Zlatkis, A. JSC/Schneider, H. J. 52-Clinical Med
(72-970 970-51-25)

NAS 9-13462 **University of Houston** **3304**
Cross correlation study of surface roughness effects on impulse response using S-193 altimeter data Skylab EREP investigation 413M
Period *Obligations*
06/04/73-12/31/74 **FY73: \$5,000** **TOTAL: \$5,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hayre, H. S. JSC/White, T. T. 19-Phys Sci, NEC
(72-960 948-63-86)

NGL 44-005-021 **University of Houston** **3305**
Multidisciplinary space related research
Period *Obligations*
02/16/66-06/01/73 **FY73:** **TOTAL: \$275,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Allred, J. C. HQ-PY/Redding, E. R. 99-Multi-Discip
(10-370 183-00-00)

NGL 44-005-041 **University of Houston** **3306**
Study of solar flare particle events and related solar physics
Period *Obligations*
05/20/66-08/01/73 **FY73: \$54,000** **TOTAL: \$493,346**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Goodman, C. JSC/Robbins, D. E. 11-Astronomy
(72-980 975-84-10) (72-980 975-84-47)

NGL 44-005-090 **University of Houston** **3307**
Establishment of resident graduate research assistantships
Period *Obligations*
06/04/69-06/30/75 **FY73:** **TOTAL: \$88,023**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Huang, C. J. JSC/Eandi, B. K. 49-Engr, NEC
(72-910 914-50-00) (72-910 914-40-00)

NGL 44-005-184 **University of Houston** **3308**
Lunar sample analysis
Period *Obligations*
02/01/73-01/31/76 **FY73: \$69,400** **TOTAL: \$69,400**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
King, E. A. JSC/Harris, J. W. 32-Gelological Sci
(72-910 914-40-00)

NGR 44-005-002 **University of Houston** **3309**
Studies in organic cosmochemistry, including consideration of compound formation under primitive earth conditions & of organic material in selected meteorites
Period *Obligations*
06/18/62-11/30/73 **FY73: \$60,000** **TOTAL: \$544,705**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Oro, J. HQ-SL/Young, R. S. 32-Gelological Sci
Zlatkis, A.
(10-840 192-55-62)

NASA'S UNIVERSITY PROGRAM TEXAS (Continued)

NGR 44-005-091 **University of Houston** **3310**
Spectroscopic and photochemical study of photochromic compounds

Period	Obligations	
03/07/69-01/31/74	FY73: \$45,000	TOTAL: \$240,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Becker, R. S.	HQ-SL/Young, R. S.	12-Chemistry

(10-840 192-55-61)

NGR 44-005-120 **University of Houston** **3311**
Maximum transient response of discrete linear systems due to forcing functions within equality constraints

Period	Obligations	
08/19/70-12/31/72	FY73:	TOTAL: \$36,600
Prin. Invest.	NASA Tech. Officer	CASE Category
Michalopoulos, C. D.	JSC/Glynn, P. C.	21-Mathematics

(72-910 914-50-00)

NGR 44-005-125 **University of Houston** **3312**
Lunar sample analysis

Period	Obligations	
02/11/71-01/31/74	FY73: \$45,000	TOTAL: \$220,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Oro, J.	JSC/Harris, J. W.	12-Chemistry

(72-910 914-40-00)

NGR 44-005-127 **University of Houston** **3313**
Lunar sample analysis

Period	Obligations	
01/19/71-01/31/73	FY73:	TOTAL: \$77,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Oro, J.	JSC/Harris, J. W.	13-Physics

(72-910 914-40-00)

NGR 44-005-131 **University of Houston** **3314**
Geologic interpretation of Mars surface photography from Mariners 6 and 7

Period	Obligations	
10/26/70-12/31/73	FY73: \$16,975	TOTAL: \$45,117
Prin. Invest.	NASA Tech. Officer	CASE Category
King, E. A., Jr.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	

(10-840 384-50-80) (10-840 384-50-71)

NGR 44-005-133 **University of Houston** **3315**
Investigation of auroral disturbances

Period	Obligations	
03/15/71-11/30/73	FY73: \$65,000	TOTAL: \$189,036
Prin. Invest.	NASA Tech. Officer	CASE Category
Sheldon, W. R.	HQ-SG/Schmerling, E. R.	31-Atmos Sci
	HQ-SG/Holtz, J. R.	

(10-850 879-11-00)

NGR 44-005-137 **University of Houston** **3316**
Thermomagnetic torques in gases

Period	Obligations	
02/17/71-08/31/74	FY73: \$50,000	TOTAL: \$129,200
Prin. Invest.	NASA Tech. Officer	CASE Category
Hildebrandt, A. F.	JSC/Bonner, G.	13-Physics

(72-950 951-16-00) (72-910 914-50-00) (72-850 188-41-55)

NGR 44-005-162 **University of Houston** **3317**
Studies of low level magnetic noise

Period	Obligations	
05/06/72-10/01/73	FY73:	TOTAL: \$18,700
Prin. Invest.	NASA Tech. Officer	CASE Category
Vant Hull, L. L.	JSC/Strangway, D. W.	13-Physics

(72-810 195-42-60)

NGR 44-005-181 **University of Houston** **3318**
Meteor radiation analysis

Period	Obligations	
12/08/72-09/01/73	FY73: \$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Eisner, M.	JSC/Cour Palais, B.	11-Astronomy
	JSC/Phinney, W. C.	

(72-950 951-16-00)

NGR 44-005-188 **University of Houston** **3319**
Investigation of origin of chondritic meteorites

Period	Obligations	
06/29/73-06/30/74	FY73: \$9,151	TOTAL: \$9,151
Prin. Invest.	NASA Tech. Officer	CASE Category
King, E. A., Jr.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Pomeroy, J. H.	

(10-810 195-42-67)

NGT 44-005-114 **University of Houston** **3320**
Program of faculty space systems engineering institute

Period	Obligations	
04/06/70-03/31/74	FY73: \$107,013	TOTAL: \$395,993
Prin. Invest.	NASA Tech. Officer	CASE Category
Huang, C. J.	HQ-PY/Carter, C. H.	49-Engr, NEC

(10-371 340-00-00)

NGT 44-005-115 **University of Houston** **3321**
Summer faculty fellowship program in research

Period	Obligations	
01/01/72-03/31/74	FY73: \$113,944	TOTAL: \$495,017
Prin. Invest.	NASA Tech. Officer	CASE Category
Huang, C. J.	HQ-PY/Carter, C. H.	49-Engr, NEC

(72-950 951-16-00) (72-910 914-50-00) (10-371 340-00-00)

NAS 5-10387 **University of Texas - Austin** **3322**
Boreight and alignment tests of radio telescope installation

Period	Obligations	
04/27/67-06/01/72	FY73:	TOTAL: \$243,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Straiton, A. W.	GSFC/Ippolito, L. J.	45-Elec Engr

(51-620 630-00-00) (51-620 630-12-00) (51-620 164-00-00)

NAS 8-27931 **University of Texas - Austin** **3323**
Equations of conditions for the coefficient of Runge-Kutta-Nystrom formulas

Period	Obligations	
09/03/71-05/01/73	FY73:	TOTAL: \$14,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Tapley, B. D.	MSFC/Fehlberg, E.	21-Mathematics
Bettis, D. G.		

(62-910 933-50-00)

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NAS 8-28511 **University of Texas - Austin** **3324**
Observation of man/system integration in the man/system simulator

Period	Obligations	
03/22/72-12/21/73	FY73: TOTAL: \$9,878	
Prin. Invest.	NASA Tech. Officer	CASE Category
Helmreich, K.	MSFC/Walters, H. H.	69-Psych, NEC
(62-970 970-63-50)		

NAS 9-10976 **University of Texas - Austin** **3325**
Separated flow phenomena

Period	Obligations	
06/16/70-07/30/73	FY73: TOTAL: \$145,738	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bertin, J. J.	JSC/Goodrich, W. D.	41-Aero Engr
(72-980 908-42-39)	(72-742 124-00-00)	

NAS 9-11082 **University of Texas - Austin** **3326**
Shock impingement investigation

Period	Obligations	
06/25/70-08/22/72	FY73: TOTAL: \$67,462	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bertin, J. J.	JSC/Goodrich, W. D.	46-Mech Engr
(72-742 124-00-00)		

NAS9-11419 **University of Texas - Austin** **3327**
Installation of data storage unit at McDonald Observatory

Period	Obligations	
12/03/70-08/01/71	FY73: TOTAL: \$12,300	
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, H. J.	JSC/Potter, A. E.	11-Astronomy
(72-850 188-00-00)	(72-840 185-00-00)	

NAS 9-12568 **University of Texas - Austin** **3328**
Operation, maintenance, & analysis of a data storage unit

Period	Obligations	
05/24/72-05/31/74	FY73: \$15,000 TOTAL: \$30,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Barnes, P. G.	JSC/Potter, A. E.	13-Physics
(72-840 185-47-32)	(72-850 188-41-55)	

NAS 9-12919 **University of Texas - Austin** **3329**
Environmental atlas of the Houston area test site (HATS)

Period	Obligations	
06/20/72-09/30/73	FY73: \$2,940 TOTAL: \$52,940	
Prin. Invest.	NASA Tech. Officer	CASE Category
Brown, L. F.	JSC/Dornbach, J. E.	32-Geological Sci
(72-680 160-75-55)		

NAS 9-12949 **University of Texas - Austin** **3330**
Development of an economic atlas of the Houston area test site

Period	Obligations	
06/27/72-12/31/72	FY73: TOTAL: \$22,850	
Prin. Invest.	NASA Tech. Officer	CASE Category
	JSC/Dornbach, J.	72-Economics
(72-680 160-75-55)		

NAS 9-13176 **University of Texas - Austin** **3331**
UV stellar astronomy Skylab experiment

Period	Obligations	
02/00/32-12/31/74	FY73: \$175,200 TOTAL: \$175,200	
Prin. Invest.	NASA Tech. Officer	CASE Category
Henize, K. G.	JSC/Mansur, S. R.	11-Astronomy
(72-960 948-80-80)		

NAS 9-13312 **University of Texas - Austin** **3332**
Stream network analysis from orbital and suborbital imagery

Period	Obligations	
03/14/73-06/30/74	FY73: \$27,100 TOTAL: \$27,100	
Prin. Invest.	NASA Tech. Officer	CASE Category
Baker, V. R.	JSC/Miller, M.	32-Geological Sci
Holz, R. K.		
(72-960 948-63-83)		

NASR 242 **University of Texas - Austin** **3333**
Design, development, fabrication & installation at McDonald Observatory of an 84 inch telescope suitable for lunar and planetary observations

Period	Obligations	
09/22/64-09/01/72	FY73: TOTAL: \$4,900,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Smith, H. J.	HQ-SL/	11-Astronomy
(10-840 185-00-00)	(10-850 188-00-00)	

NGL 44-012-006 **University of Texas - Austin** **3334**
Research on millimeter wavelength radiation from solar bodies

Period	Obligations	
04/29/63-03/31/76	FY73: \$89,932 TOTAL: \$1,185,332	
Prin. Invest.	NASA Tech. Officer	CASE Category
Cogdell, J. R.	HQ-SL/Brunk, W. E.	45-Elec Engr
	HQ-SL/Fellows, R. F.	
(10-840 196-41-82)	(10-840 185-00-00)	

NGL 44-012-008 **University of Texas - Austin** **3335**
Study of theory and analysis of low thrust guidance problems in deterministic linear control

Period	Obligations	
11/01/63-01/01/74	FY73: TOTAL: \$217,657	
Prin. Invest.	NASA Tech. Officer	CASE Category
Tapley, B. D.	HQ-RE/Michaels, T. S.	42-Astro Engr
	JPL/Jordan, J. F.	
(10-750 125-17-17)		

NGL 44-012-045 **University of Texas - Austin** **3336**
A study of ignimbrites in the Cordilleran region as a basis for interpretation of lunar plains

Period	Obligations	
05/31/66-05/01/75	FY73: TOTAL: \$147,886	
Prin. Invest.	NASA Tech. Officer	CASE Category
Clabaugh, S. E.	HQ-SM/Bryson, R. P.	32-Geological Sci
	HQ-SM/Allenby, R. J.	
(10-810 195-42-64)	(10-840 185-00-00)	(10-810 195-00-00)

NGL 44-012-055 **University of Texas - Austin** **3337**
Polarization and time structure of Jovian decametric radiation and the structure of interplanetary plasma

Period	Obligations	
05/25/66-04/30/76	FY73: \$61,643 TOTAL: \$786,927	
Prin. Invest.	NASA Tech. Officer	CASE Category
Douglas, J. N.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-41-82)	(10-840 185-00-00)	

NASA'S UNIVERSITY PROGRAM
TEXAS (Continued)

NGR 44-012-133 **University of Texas - Austin** **3338**
On-site graduate research program at NASA MSC

<i>Period</i>	<i>Obligations</i>	
09/17/69-09/15/73	FY73: TOTAL: \$66,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
	JSC/Eandi, B. K.	49-Engr, NEC
	JSC/Youngblood, J. L.	

(72-910 914-50-00)

NGR 44-012-152 **University of Texas - Austin** **3339**
A program of planetary studies

<i>Period</i>	<i>Obligations</i>	
06/25/69-08/31/73	FY73: \$305,000 TOTAL: \$1,354,941	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, H. J.	HQ-SL/Roman, N. G.	11-Astronomy
	HQ-SL/Brunk, W. E.	

(10-840 196-41-80) (10-850 188-41-51)

NGR 44-012-165 **University of Texas - Austin** **3340**
Continuation of lunar laser ranging experiments at McDonald Observatory

<i>Period</i>	<i>Obligations</i>	
10/11/69-08/31/74	FY73: \$308,439 TOTAL: \$1,514,152	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, H. J.	HQ-SM/Strickland, A. T.	11-Astronomy
	HQ-SL/Brunk, W. E.	

(10-810 195-43-50) (10-810 383-09-50)

NGR 44-012-194 **University of Texas - Austin** **3341**
Morphologic and tectonic studies of Mars from Mariner 6 and 7 photographs

<i>Period</i>	<i>Obligations</i>	
10/01/70-02/28/74	FY73: \$6,039 TOTAL: \$33,082	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ingerson, F. E.	HQ-SL/Dwornik, S. E.	11-Astronomy
	HQ-SL/Allingham, J. W.	

(10-840 384-50-80)

NGR 44-012-202 **University of Texas - Austin** **3342**
Infrared site testing at McDonald Observatory

<i>Period</i>	<i>Obligations</i>	
05/18/71-09/30/72	FY73: TOTAL: \$17,191	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, H. J.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	

(10-840 196-41-80)

NGR 44-012-209 **University of Texas - Austin** **3343**
Study of optical properties of X-ray source

<i>Period</i>	<i>Obligations</i>	
05/26/71-06/30/73	FY73: \$12,460 TOTAL: \$24,951	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vanden Bout, P. A.	HQ-SG/Sobieski, S.	11-Astronomy
	HQ-SG/Roman, N. G.	

(10-850 385-41-00)

NGR 44-012-215 **University of Texas - Austin** **3344**
Low noise spectroscopy of solar photosphere and sunspots

<i>Period</i>	<i>Obligations</i>	
04/27/72-07/31/73	FY73: TOTAL: \$9,624	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lambert, D. L.	HQ-SG/Weldon, J. M.	11-Astronomy
	HQ-SG/Oertel, G. K.	

(10-850 188-38-53)

NGR 44-012-219 **University of Texas - Austin** **3345**
Lunar motion analysis (lunar laser ranging experiment)

<i>Period</i>	<i>Obligations</i>	
08/11/71-08/31/73	FY73: \$87,208 TOTAL: \$167,708	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Mulholland, J. D.	HQ-SM/Strickland, A. T.	11-Astronomy

(10-810 383-09-56)

NGR 44-012-221 **University of Texas - Austin** **3346**
Fluctuations under a turbulent boundary layer

<i>Period</i>	<i>Obligations</i>	
10/07/71-11/30/73	FY73: \$60,000 TOTAL: \$119,741	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Panton, R. L.	ARC/Dods, J. B., Jr.	41-Aero Engr

(21-704 501-22-05)

NGR 44-012-224 **University of Texas - Austin** **3347**
Performance and adjustment of isolated environments

<i>Period</i>	<i>Obligations</i>	
06/17/72-09/01/73	FY73: TOTAL: \$60,000	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Helmreich, A. L.	JSC/Fedderson, W. E.	69-Psych, NEC

(72-910 914-51-00)

NGR 44-012-225 **University of Texas - Austin** **3348**
Stable carbon isotope ratio variations in blue-green algae as a function of growth conditions

<i>Period</i>	<i>Obligations</i>	
06/20/72-05/31/74	FY73: \$13,050 TOTAL: \$23,916	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Parker, P. L.	HQ-SL/Young, R. S.	32-Geological Sci
Van Boales, C.		

(10-840 192-55-62)

NGR 44-012-240 **University of Texas - Austin** **3349**
Josephson junction detector system for spectral studies of Jupiter and Venus

<i>Period</i>	<i>Obligations</i>	
02/12/73-02/14/74	FY73: \$9,991 TOTAL: \$9,991	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ulrich, B. T.	ARC/Mason, R. H.	11-Astronomy
	ARC/Cameron, R. M.	

(21-850 352-02-01)

NGR 44-012-255 **University of Texas - Austin** **3350**
Investigation of highly efficient satellite solution methods

<i>Period</i>	<i>Obligations</i>	
03/01/73-08/30/73	FY73: \$15,219 TOTAL: \$15,219	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Nacozy, P. E.	GSFC/Velez, C. E.	21-Mathematics
Scheifele, G. S.		

(51-500 311-80-41)

NGT 44-012-009 **University of Texas - Austin** **3351**
Training of graduate students in space-related science and technology

<i>Period</i>	<i>Obligations</i>	
04/04/63-08/01/72	FY73: TOTAL: \$891,899	
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ellison, F. P.	HQ-PY/Carter, C. H.	99-Multi-Discip

(10-370 181-00-00)

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NSR 44-012-120 **University of Texas - Austin** **3352**
Research program to determine the propagation limitation on the accuracy of radio tracking system used for position fixing

Period	Obligations	
04/26/70-06/30/73	FY73: TOTAL: \$49,700	
Prin. Invest.	NASA Tech. Officer	CASE Category
Tupa, B.	GSFC/Berbert, J. H.	32-Geological Sci
	GSFC/Schmid, P. E.	
(10-680 160-00-00)		

NSR 44-012-206 **University of Texas - Austin** **3353**
For completion of a revision of the general catalogue of stellar radial velocities

Period	Obligations	
06/21/71-05/28/72	FY73: TOTAL: \$2,552	
Prin. Invest.	NASA Tech. Officer	CASE Category
Evans, D. S.	HQ-SG/Bogges, N. W.	11-Astronomy
	HQ-SG/Roman, N. G.	
(10-850 188-41-58)		

NAS 9-7153 **University of Texas - Cancer Center** **3354**
Hybrid computer development

Period	Obligations	
06/22/67-05/30/73	FY73: \$1,060 TOTAL: \$461,060	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mitchell, B. A., Jr.	JSC/Moseley, E. C.	52-Clinical Med
(72-910 914-51-00)	(72-910 914-50-00)	

NAS 9-11117 **University of Texas - Cancer Center** **3355**
Gamma spectrometry

Period	Obligations	
06/29/70-10/31/72	FY73: TOTAL: \$30,748	
Prin. Invest.	NASA Tech. Officer	CASE Category
Jahns, M. F.	JSC/Benson, R. E.	53-Other Medical
	JSC/Barnes, C. M.	
(72-910 914-50-00)		

NAS 9-11119 **University of Texas - Cancer Center** **3356**
Mathematical models

Period	Obligations	
06/29/70-09/31/72	FY73: TOTAL: \$45,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mitchell, B. A., Jr.	JSC/Rummel, J. A.	59-Life Sci, NEC
	JSC/Waligora, J. M.	
(72-910 914-50-00)		

NAS 9-13042 **University of Texas - Cancer Center** **3357**
Evaluation & documentation of endocrine laboratory

Period	Obligations	
06/29/72-12/31/73	FY73: \$11,281 TOTAL: \$71,281	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mitchell, B. A., Jr.	JSC/Moseley, E. C.	61-Biol Aspects
(72-960 948-60-90)	(72-910 914-50-00)	

NAS 1-9699 **University of Texas - Dallas** **3358**
Participation in the science planning for the Viking 1975 missions in the area of entry science

Period	Obligations	
04/08/70-03/31/77	FY73: \$30,456 TOTAL: \$122,700	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hanson, W. B.	LARC/Soffen, G. A.	31-Atmos Sci
(23-840 815-20-00)		

NAS 5-9075 **University of Texas - Dallas** **3359**
Cosmic ray anisotropy experiment

Period	Obligations	
01/07/67-07/31/72	FY73: TOTAL: \$905,046	
Prin. Invest.	NASA Tech. Officer	CASE Category
Palmeira, R. A.	GSFC/Butler, P.	11-Astronomy
(51-850 861-00-00)	(51-850 861-32-00)	

NAS 5-9112 **University of Texas - Dallas** **3360**
Soft particle spectrometer experiment

Period	Obligations	
01/18/65-10/01/72	FY73: \$4,300 TOTAL: \$976,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Heikkila, W. J.	GSFC/Nelson, E. D.	19-Phys Sci, NEC
(51-850 872-12-00)		

NAS 5-9311 **University of Texas - Dallas** **3361**
Ionospheric duct detector experiment for the orbiting geophysical observatory, mission F /OGO-F/

Period	Obligations	
04/05/66-06/30/73	FY73: TOTAL: \$777,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hanson, W. B.	GSFC/Meese, K. J.	13-Physics
(51-850 841-00-00)	(51-850 841-12-00)	(51-850 385-50-00)

NAS 5-9444 **University of Texas - Dallas** **3362**
Data reduction and analysis

Period	Obligations	
01/27/67-11/01/77	FY73: TOTAL: \$74,174	
Prin. Invest.	NASA Tech. Officer	CASE Category
	GSFC/	13-Physics
(51-850 872-00-00)	(51-850 872-12-00)	

NAS 5-11003 **University of Texas - Dallas** **3363**
Magnetic mass spectrometer on ISIS-B

Period	Obligations	
02/01/67-12/30/73	FY73: \$42,000 TOTAL: \$703,015	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffman, J. H.	GSFC/Jackson, J. E.	31-Atmos Sci
Breig, E. L.		
(51-850 872-12-00)		

NAS 5-11011 **University of Texas - Dallas** **3364**
ISIS-B soft-particle spectrometer

Period	Obligations	
02/01/67-12/30/73	FY73: \$104,000 TOTAL: \$590,627	
Prin. Invest.	NASA Tech. Officer	CASE Category
Heikkila, W. J.	GSFC/Jackson, J. E.	31-Atmos Sci
Wright, W. H.		
Smith, J. B.		
(51-850 872-12-00)		

NAS 5-11406 **University of Texas - Dallas** **3365**
Atmosphere Explorer magnetic ion mass spectrometer

Period	Obligations	
04/06/71-04/15/75	FY73: \$232,000 TOTAL: \$560,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hoffman, J. H.	GSFC/Findlay, J. A.	31-Atmos Sci
Hanson, W. B.		
(51-850 852-22-00)		

NASA'S UNIVERSITY PROGRAM TEXAS (Continued)

NAS 5-11407 **University of Texas - Dallas** **3366**
Atmosphere Explorer planar ion trap experiment

Period	Obligations
04/06/71-04/15/75	FY73: \$260,000 TOTAL: \$535,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hanson, W. B.	GSFC/Findlay, J. A. 31-Atmos Sci
Sanatani, S.	
Zuccaro, D. R.	
(51-850 852-22-00)	

NAS 5-23184 **University of Texas - Dallas** **3367**
OGO-6 ion concentration study

Period	Obligations
12/08/72-06/01/73	FY73: \$7,000 TOTAL: \$7,000
Prin. Invest.	NASA Tech. Officer CASE Category
McClure, J. P.	GSFC/Golden, T. S. 31-Atmos Sci
(51-620 636-18-9X)	

NAS 9-5964 **University of Texas - Dallas** **3368**
Cold cathode gauge experiment for ALSEP

Period	Obligations
05/16/66-12/31/73	FY73: \$60,000 TOTAL: \$612,930
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, J. S.	JSC/Eichelman, W. F. 19-Phys Sci, NEC
(72-910 914-40-00)	

NAS 9-10410 **University of Texas - Dallas** **3369**
Flight mass spectrometer

Period	Obligations
01/28/70-09/30/73	FY73: \$68,180 TOTAL: \$2,015,180
Prin. Invest.	NASA Tech. Officer CASE Category
Hoffman, J. H.	JSC/Eichelman, W. F. 13-Physics
(72-910 914-49-00)	

NAS 9-12074 **University of Texas - Dallas** **3370**
Scientific support of the lunar atmospheric mass spectrometer

Period	Obligations
08/26/71-01/31/75	FY73: \$200,000 TOTAL: \$300,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hoffman, J. H.	JSC/Eichelman, W. F. 19-Phys Sci, NEC
(72-910 914-40-00)	

NAS 9-12999 **University of Texas - Dallas** **3371**
Preliminary design review for Skylab external atmosphere gas analyzer instrument

Period	Obligations
06/28/72-07/19/72	FY73: \$6,438 TOTAL: \$145,053
Prin. Invest.	NASA Tech. Officer CASE Category
Hoffman, J. H.	JSC/Baker, M. F. 39-Env Sci, NEC
	JSC/Dell, M. E.
(72-960 948-80-80)	

NAS 9-13512 **University of Texas - Dallas** **3372**
Development of a mathematical technique for analysis of remote sensing data

Period	Obligations
05/31/73-05/31/74	FY73: \$59,995 TOTAL: \$59,995
Prin. Invest.	NASA Tech. Officer CASE Category
Odell, P. L.	JSC/Baker, K. 21-Mathematics
(72-680 160-75-98)	

NGL 44-004-001 **University of Texas - Dallas** **3373**
Research in earth and planetary sciences, including development of advanced scientific experiments in lunar, planetary and space exploration

Period	Obligations
05/28/62-03/01/75	FY73: TOTAL: \$6,441,277
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, F. S.	HQ-SL/Fellows, R. F. 31-Atmos Sci
Hanson, W. B.	HQ-SL/Hipscher, H. F.
(10-370 183-00-00)	(10-840 185-00-00) (10-840 185-47-81)

NGL 44-004-026 **University of Texas - Dallas** **3374**
Investigations into the mechanism and rates of atmospheric mixing in the lower thermosphere

Period	Obligations
05/05/65-03/31/76	FY73: \$290,000 TOTAL: \$1,273,751
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, F. S.	HQ-SL/Fellows, R. F. 31-Atmos Sci
	HQ-SL/Hipscher, H. F.
(10-840 185-47-81)	(10-840 384-47-81)

NGL 44-004-130 **University of Texas - Dallas** **3375**
Selected studies in the space sciences

Period	Obligations
03/17/72-03/31/76	FY73: \$200,000 TOTAL: \$400,000
Prin. Invest.	NASA Tech. Officer CASE Category
Johnson, F. S.	HQ-PY/Redding, E. R. 99-Multi-Discip
(10-371 340-00-00)	

NGR 44-004-030 **University of Texas - Dallas** **3376**
Study of electron collision frequency under ionospheric conditions

Period	Obligations
05/05/65-08/31/73	FY73: \$25,000 TOTAL: \$520,765
Prin. Invest.	NASA Tech. Officer CASE Category
Heikkila, W. J.	HQ-SG/Schmerling, E. R. 31-Atmos Sci
	HQ-SG/Hallenbeck, D. R.
(10-850 188-36-56)	(10-850 188-00-00) (10-850 188-39-53)

NGR 44-004-116 **University of Texas - Dallas** **3377**
Lunar sample analysis

Period	Obligations
01/13/71-01/31/74	FY73: \$34,480 TOTAL: \$109,480
Prin. Invest.	NASA Tech. Officer CASE Category
Carter, J. L.	JSC/Harris, J. W. 13-Physics
(72-910 914-40-00)	

NGR 44-004-117 **University of Texas - Dallas** **3378**
Lunar sample analysis

Period	Obligations
01/12/71-01/31/73	FY73: TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer CASE Category
Helsley, C. E.	JSC/Harris, J. W. 12-Chemistry
(72-910 914-40-00)	

NGR 44-004-120 **University of Texas - Dallas** **3379**
Rocket probes for the upper F-region

Period	Obligations
02/09/71-01/31/74	FY73: \$200,000 TOTAL: \$395,000
Prin. Invest.	NASA Tech. Officer CASE Category
Hanson, W. B.	HQ-SG/Schmerling, E. R. 31-Atmos Sci
	HQ-SG/Ott, E. J.
(10-850 385-36-00)	

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NGR 44-004-121	University of Texas - Dallas	3380	Specific problems in cosmic ray research soluble through use of the Pioneer 6-9 spacecraft
<i>Period</i>	<i>Obligations</i>		
12/06/71-09/30/73	FY73: TOTAL: \$70,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
McCracken, K. G.	HQ-SG/Opp, A. G.	11-Astronomy	
(10-850 385-46-00)			

NGR 44-004-124	University of Texas - Dallas	3381	Rocket investigation of auroral zone disturbances
<i>Period</i>	<i>Obligations</i>		
08/10/71-06/30/73	FY73: \$160,000 TOTAL: \$320,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Heikkila, W. J.	HQ-SG/Schmerling, E. R.	31-Atmos Sci	
	HQ-SG/Ott, E. J.		
(10-850 879-11-00)			

NGR 44-004-133	University of Texas - Dallas	3382	Comparison of solar cosmic ray anisotropies and interplanetary magnetic field data
<i>Period</i>	<i>Obligations</i>		
04/23/73-02/28/74	FY73: \$30,000 TOTAL: \$30,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Allum, F. R.	HQ-SG/Opp, A. G.	11-Astronomy	
	HQ-SG/Kavanagh, L. D., Jr.		
(10-850 385-46-00)			

NGR 44-004-150	University of Texas - Dallas	3383	Data analysis for ISIS soft-particle spectrometer
<i>Period</i>	<i>Obligations</i>		
03/15/73-09/14/73	FY73: \$35,000 TOTAL: \$35,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Heikkila, W. J.	HQ-SG/Schmerling, E. R.	31-Atmos Sci	
	HQ-SG/Kavanagh, L. D., Jr.		
(10-850 385-36-00)			

NSG 583	University of Texas - Dallas	3384	Partial support of International Symposium on Gravitational Collapse and other topics in relativistic astrophysics
<i>Period</i>	<i>Obligations</i>		
02/01/65-01/01/76	FY73: TOTAL: \$8,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Reaney, R. C.	HQ-SG/	13-Physics	
(10-850 188-00-00)			

NAS 9-10566	University of Texas-Dental Branch	3385	Preventive dentistry program
<i>Period</i>	<i>Obligations</i>		
02/25/70-02/28/75	FY73: \$15,000 TOTAL: \$45,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Shannon, I. L.	JSC/Buchanan, P.	51-Biology	
(72-970 970-51-45)	(72-910 914-51-00)	(72-910 914-50-00)	

NAS 9-11118	University of Texas-Dental Branch	3386	Oral hygiene study
<i>Period</i>	<i>Obligations</i>		
06/27/70-06/30/74	FY73: \$42,660 TOTAL: \$110,990		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Brown, L. R.	JSC/Buchanan, P.	51-Biology	
(72-970 970-51-45)	JSC/Frome, W. J.		

NGR 44-090-001	University of Texas-Dental Branch	3387	Investigation of smooth muscle tone
<i>Period</i>	<i>Obligations</i>		
06/28/71-09/01/72	FY73: TOTAL: \$20,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hampton, J. K., Jr.	JSC/Alexander, W. C.	52-Clinical Med	
	JSC/Leach, C. S.		
(72-870 189-54-06)			

NGR 44-012-147	University of Texas - El Paso	3388	Plagioclase mineralogy of alkaline olivine basalt
<i>Period</i>	<i>Obligations</i>		
05/02/67-10/15/72	FY73: TOTAL: \$27,197		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hoffer, J. M.	HQ-SM/Bryson, R. P.	32-Geological Sci	
	HQ-SM/Allenby, R. J.		
(10-810 383-00-00)	(10-810 195-00-00)		

NAS 9-11088	Univ of Texas Medical Branch - Galveston	3389	Study of mans immunity to space flight
<i>Period</i>	<i>Obligations</i>		
06/30/70-09/30/74	FY73: \$93,816 TOTAL: \$253,775		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ritzmann, S. E.	JSC/Kimzey, S. L.	52-Clinical Med	
	JSC/Kimzey, S. L.		
(72-910 914-50-00)	(72-960 948-60-91)		

NAS 9-12296	Univ of Texas Medical Branch - Galveston	3390	Development of procedures for assay of biological samples
<i>Period</i>	<i>Obligations</i>		
11/01/71-10/01/72	FY73: TOTAL: \$69,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ritzmann, S. E.	JSC/Leach, C.	52-Clinical Med	
(72-970 970-51-16)	Levin, W. C.		

NAS 9-13102	Univ of Texas Medical Branch - Galveston	3391	Blood studies
<i>Period</i>	<i>Obligations</i>		
06/30/72-06/30/75	FY73: \$30,000 TOTAL: \$50,000		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Lockhart, L. H.	JSC/Kimzey, S. L.	53-Other Medical	
(72-960 948-60-91)			

NAS 9-13143	Univ of Texas Medical Branch - Galveston	3392	Pi support for PSE
<i>Period</i>	<i>Obligations</i>		
08/22/72-10/31/74	FY73: \$239,305 TOTAL: \$239,305		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Latham, G. V.	JSC/Eichelman, W. F.	13-Physics	
(72-910 914-40-00)			

NGR 44-088-002	Univ of Texas Medical Branch - Galveston	3393	Mechanisms of cerebral blood flow changes during acceleration stress
<i>Period</i>	<i>Obligations</i>		
10/13/71-10/31/73	FY73: \$25,877 TOTAL: \$51,979		
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Stone, H. L.	ARC/Sandler, H.	52-Clinical Med	
(21-970 970-21-12)			

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NAS 2-3082 University of Texas Health Center - Dallas 3394
Flight hardware for biosatellite experiment

Period	Obligations	
06/29/69-06/01/75	FY73: TOTAL: \$234,841	
Prin. Invest.	NASA Tech. Officer	CASE Category
	ARC/	51-Biology

(21-870 883-00-00)

NGR 44-012-003 University of Texas Health Center - Dallas 3395
Influence of gravity on unicellular organism

Period	Obligations	
04/12/71-03/31/74	FY73: \$38,000 TOTAL: \$545,218	
Prin. Invest.	NASA Tech. Officer	CASE Category
Montgomery, P. O., Jr.	ARC/Tremor, J. W.	51-Biology
Paul, J. S.		

(21-970 970-21-61) (10-870 189-00-00)

NGR 44-012-151 University of Texas Health Center - Dallas 3396
Cardiovascular effect

Period	Obligations	
01/07/72-02/28/74	FY73: \$50,000 TOTAL: \$178,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Mitchell, J. H.	JSC/Hoffler, G. W.	53-Other Medical

(72-970 970-51-12) (72-910 914-51-00) (21-770 127-00-00)

NGR 44-094-001 Univ of Texas Health Center - San Antonio 3397
Control of brain amine levels in mice

Period	Obligations	
06/10/72-06/30/74	FY73: \$20,000 TOTAL: \$40,390	
Prin. Invest.	NASA Tech. Officer	CASE Category
Morgan, W. W.	JSC/Leach, C.	51-Biology

(72-970 970-51-16)

NGR 44-094-003 Univ of Texas Health Center - San Antonio 3398
Role of systemic & renal hemodynamics

Period	Obligations	
08/01/73-12/31/73	FY73: \$35,000 TOTAL: \$35,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Earley, L. E.	JSC/Jackson, M.	53-Other Medical

(72-970 970-51-12)

NAS 9-11384 Univ of Texas-School of Public Health 3399
Comparative medical study

Period	Obligations	
11/13/70-09/01/71	FY73: TOTAL: \$45,472	
Prin. Invest.	NASA Tech. Officer	CASE Category
Eitzen, H. E.	JSC/Wooley, B. C.	59-Life Sci, NEC

(72-910 914-50-00)

NAS 9-11522 Univ of Texas-School of Public Health 3400
Public health applications

Period	Obligations	
01/27/71-02/01/72	FY73: TOTAL: \$37,998	
Prin. Invest.	NASA Tech. Officer	CASE Category
Scanlon, J. E.	JSC/Fuller, C. E.	53-Other Medical

(72-680 160-00-00) (72-680 160-75-75)

NAS 9-11701 Univ of Texas-School of Public Health 3401
Food safety standards and criteria

Period	Obligations	
05/19/71-03/31/74	FY73: TOTAL: \$37,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Chambers, L. A.	JSC/Heidelbaugh, N. D.	59-Life Sci, NEC
Pier, S. M.		

(72-960 948-60-90) (72-910 914-50-00)

NAS 9-12040 Univ of Texas-School of Public Health 3402
Public health ecology water degradation

Period	Obligations	
06/23/71-06/30/73	FY73: TOTAL: \$52,600	
Prin. Invest.	NASA Tech. Officer	CASE Category
Davis, E. M.	JSC/Fuller, C. E.	39-Env Sci, NEC

(72-680 160-75-75)

NAS 9-12041 Univ of Texas-School of Public Health 3403
Public health ecology-air pollution

Period	Obligations	
06/23/71-06/30/73	FY73: TOTAL: \$61,500	
Prin. Invest.	NASA Tech. Officer	CASE Category
Severs, R. K.	JSC/Fuller, C. E.	39-Env Sci, NEC

(72-680 160-75-75)

NAS 9-12640 Univ of Texas-School of Public Health 3404
Comparative health status studies

Period	Obligations	
04/04/72-01/15/73	FY73: TOTAL: \$14,174	
Prin. Invest.	NASA Tech. Officer	CASE Category
Labarthe, D. R.	JSC/Schneider, H. J.	53-Other Medical

(72-910 914-50-00)

NAS 9-12696 Univ of Texas-School of Public Health 3405
Health applications

Period	Obligations	
05/12/72-10/31/73	FY73: TOTAL: \$146,500	
Prin. Invest.	NASA Tech. Officer	CASE Category
Scallon, J. E.	JSC/Fuller, C. E.	53-Other Medical
	JSC/Barnes, C. M.	

(72-680 160-75-75)

NAS 9-12783 Univ of Texas-School of Public Health 3406
Probability of illness definition

Period	Obligations	
05/26/72-06/30/74	FY73: \$40,000 TOTAL: \$88,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Downs, J. D.	JSC/McQueen, J. L.	53-Other Medical

(72-960 961-50-00)

NAS 9-12823 Univ of Texas-School of Public Health 3407
Public health applications of remote sensing to urban public health

Period	Obligations	
06/22/72-10/31/73	FY73: TOTAL: \$36,171	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rush, M. N.	JSC/Fuller, C. E.	53-Other Medical

(72-680 160-75-75)

NASA'S UNIVERSITY PROGRAM **TEXAS (Continued)**

NGR 44-084-002 Univ of Texas-School of Public Health 3408
Public health application of remote sensing on air degradation

Period	FY73:	Obligations	TOTAL:
06/22/72-05/31/73			\$19,400
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Chen, C. T.	JSC/Eandi, B. K.	39-Env Sci, NEC	
(72-910 914-50-00)			

NGR 44-015-003 West Texas State University 3409
Geology of Mare Acidalium quadrangle MO-4 on Mars

Period	FY73:	Obligations	TOTAL:
04/25/73-03/31/74	\$10,000		\$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
	HQ-SL/	32-Geological Sci	
(10-840 384-50-80)			

UTAH

NGR 45-001-011 Brigham Young University 3410
Analysis and interpretation of magnetic field measurements between Earth and Mars received from Mariner IV

Period	FY73:	Obligations	TOTAL:
05/10/65-09/30/73	\$20,000		\$186,571
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jones, D. E.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics	
	HQ-SG/Schmerling, E. R.		
(10-850 385-36-00)			

NGR 45-001-032 Brigham Young University 3411
Microwave studies of planetary atmospheres

Period	FY73:	Obligations	TOTAL:
06/05/70-05/31/74	\$16,100		\$16,100
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jones, D. E.	HQ-SL/Brunk, W. E.	11-Astronomy	
	HQ-SL/Fellows, R. F.		
(10-840 196-00-00) (10-840 196-41-82)			

NAS 5-21883 University of Utah 3412
ERTS data user investigation of the geology and hydrology of Utah and Nevada by ERTS imagery

Period	FY73:	Obligations	TOTAL:
10/24/72-01/01/74	\$36,967		\$36,967
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jensen, M. L.	GSFC/Crump, E. W.	32-Geological Sci	
Bennett, R.			
Grey, D. C.			
(51-680 641-14-03)			

NAS 6-1908 University of Utah 3413
Data processing and participation in the NASA Wallops Station meteorological rocket/Nimbus satellite data comparison project

Period	FY73:	Obligations	TOTAL:
10/06/70-09/05/73	\$63,500		\$103,122
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Staffanson, F. L.	WS/Spurling, J. F.	31-Atmos Sci	
	WS/West, W. H.		
(53-680 607-07-00)			

NAS 9-11475 University of Utah 3414
Pi support for the Apollo lunar sounder experiment

Period	FY73:	Obligations	TOTAL:
12/24/70-09/01/71			\$294,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ward, S. H.	JSC/Lafferty, P.	31-Atmos Sci	
(72-910 914-49-00)			

NAS 9-12168 University of Utah 3415
Scientific support for Apollo lunar sounder experiment

Period	FY73:	Obligations	TOTAL:
09/13/71-12/31/73	\$500,000		\$1,286,448
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Ward, S. H.	JSC/Lafferty, P. E.	32-Geological Sci	
(72-910 914-49-00)			

NAS 9-13322 University of Utah 3416
Geology of Utah & Nevada

Period	FY73:	Obligations	TOTAL:
03/10/73-06/30/74	\$38,900		\$38,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Jensen, M. L.	JSC/Miller, M. L.	32-Geological Sci	
(72-960 948-63-83)			

NGL 45-003-019 University of Utah 3417
Investigation of combustion chemistry in composite rocket propellants

Period	FY73:	Obligations	TOTAL:
12/06/65-12/01/73			\$236,247
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Baer, A. D.	HQ-RP/Wasel, R. A.	12-Chemistry	
Ryan, N. D.			
(10-710 128-00-00) (10-710 128-32-90)			

NGL 45-003-025 University of Utah 3418
Investigation of meteorological measurement techniques up to 100 kilometers

Period	FY73:	Obligations	TOTAL:
12/22/65-11/01/73	\$9,000		\$589,727
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Staffanson, F. L.	LARC/Henry, R. M.	31-Atmos Sci	
(23-680 607-06-00) (23-680 607-00-00)			

NGL 45-003-029 University of Utah 3419
The mechanics of fracture in viscoelastic media

Period	FY73:	Obligations	TOTAL:
05/18/66-10/01/73			\$160,051
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Williams, M. L.	HQ-RP/Wasel, R. A.	13-Physics	
(10-710 128-00-00) (10-710 128-32-86)			

NGL 45-003-037 University of Utah 3420
Paramagnetic resonance effect in viscoelastic materials

Period	FY73:	Obligations	TOTAL:
01/20/67-12/01/73			\$156,194
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Devires, K. L.	HQ-RP/Wasel, R. A.	46-Mech Engr	
(10-710 128-00-00) (10-710 128-32-86)			

NASA'S UNIVERSITY PROGRAM

UTAH (Continued)

NGR 45-003-085 **University of Utah** **3421**
Development of techniques for mapping tectonic features of Mars from Mariner imagery

Period	FY73:	Obligations	TOTAL:
05/21/71-06/01/73			\$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Wilson, R. C.	HQ-SL/Dwornik, S. E.	32-Geological Sci	
Ward, S. H.	HQ-SL/Morris, E. C.		
(10-840 384-50-80)			

NGR 45-003-090 **University of Utah** **3422**
Lunar sample analysis

Period	FY73:	Obligations	TOTAL:
02/08/72-01/31/74			\$68,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Ward, S. H.	JSC/Harris, J. W.	32-Geological Sci	
(72-910 914-40-00)			

NGR 45-003-093 **University of Utah** **3423**
Study a partial through crack on a plate of finite thickness

Period	FY73:	Obligations	TOTAL:
03/21/72-02/29/74			\$37,850
Prin. Invest.	NASA Tech. Officer	CASE Category	
Folias, E. S.	JSC/Foreman, R. G.	21-Mathematics	
(72-980 908-44-38)			

NGR 45-003-095 **University of Utah** **3424**
Analysis of the geologic cycle of Mars

Period	FY73:	Obligations	TOTAL:
06/29/72-06/30/74			\$28,912
Prin. Invest.	NASA Tech. Officer	CASE Category	
Wilson, R. C.	HQ-SL/Dwornik, S. E.	32-Geological Sci	
	HQ-SL/Allingham, J. W.		
(10-840 384-50-80)			

NGR 45-002-008 **Utah State University** **3425**
Response of higher plants to ultraviolet light and other stress factors

Period	FY73:	Obligations	TOTAL:
11/22/66-08/31/73			\$206,806
Prin. Invest.	NASA Tech. Officer	CASE Category	
Salisbury, F. B.	HQ-SL/Young, R. S.	51-Biology	
(10-840 192-55-64)			

NGR 45-002-016 **Utah State University** **3426**
Application of the comparison principle to analysis of nonlinear systems

Period	FY73:	Obligations	TOTAL:
06/24/70-12/31/73			\$45,551
Prin. Invest.	NASA Tech. Officer	CASE Category	
Gunderson, R. W.	ARC/Doolin, B. F.	49-Engr, NEC	
	ARC/Meyer, G.		
(21-750 125-00-00)	(21-750 135-19-02)		

VERMONT

NAS 5-21753 **University of Vermont** **3427**
Environmental study of ERTS-A imagery

Period	FY73:	Obligations	TOTAL:
06/09/72-07/31/73			\$52,226
Prin. Invest.	NASA Tech. Officer	CASE Category	
Lind, A. O.	GSFC/Szajna, E. F.	32-Geological Sci	
Henson, E. B.			
(51-680 641-14-04)	(51-680 641-14-00)		

NGT 46-001-001 **University of Vermont** **3428**
Training of graduate students in space-related science and technology

Period	FY73:	Obligations	TOTAL:
03/25/63-08/01/72			\$346,808
Prin. Invest.	NASA Tech. Officer	CASE Category	
Johnstone, D. B.	HQ-PY/Carter, C. H.	99-Multi-Discip	
(10-370 181-00-00)			

VIRGINIA

NAS 1-12152 **Christopher Newport College** **3429**
Quality control checks of VGH flight records

Period	FY73:	Obligations	TOTAL:
02/23/73-06/30/73			\$6,186
Prin. Invest.	NASA Tech. Officer	CASE Category	
McMurran, R. E.	LARC/Jewel, J. W., Jr.	41-Aero Engr	
	LARC/Morris, G. J.		
(23-704 501-38-11)			

NAS 1-9461 **College of William And Mary** **3430**
Research in physical and life sciences

Period	FY73:	Obligations	TOTAL:
08/12/69-09/01/72			\$51,570
Prin. Invest.	NASA Tech. Officer	CASE Category	
Harcum, E. R.	LARC/Yeager, P. R.	33-Oceanography	
	LARC/Hunter, W. H.		
(23-970 970-32-20)	(23-701 599-85-00)		

NAS 1-11808 **College of William And Mary** **3431**
Theoretical studies of nuclear reactions for radiation programs

Period	FY73:	Obligations	TOTAL:
06/28/72-05/12/75			\$25,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Remler, E. A.	LARC/Wilson, J. W.	13-Physics	
	LARC/Beck, S. M.		
(23-720 112-02-23)			

NGL 47-006-055 **College of William And Mary** **3432**
Research on applied multidisciplinary sciences program

Period	FY73:	Obligations	TOTAL:
03/05/71-01/31/74			\$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Sher, A.	HQ-PY/Redding, E. R.	99-Multi-Discip	
	LARC/Martin, D. J.		
(10-371 340-00-00)			

NASA'S UNIVERSITY PROGRAM **VIRGINIA (Continued)**

NGL 47-006-058 **College of William And Mary** **3433**
Applied science program

Period	Obligations	
09/01/72-08/01/75	FY73: \$98,400	TOTAL: \$98,400
Prin. Invest.	NASA Tech. Officer	CASE Category
Sher, A.	LARC/Martin, D. J.	19-Phys Sci, NEC
(23-701 599-85-00)		

NGR 47-006-010 **College of William And Mary** **3434**
Investigation of pion & muon beam transport systems

Period	Obligations	
05/23/64-12/01/72	FY73:	TOTAL: \$107,217
Prin. Invest.	NASA Tech. Officer	CASE Category
Funsten, H. O.	LARC/Smith, D. D.	13-Physics
(23-742 124-00-00) (23-742 124-09-22)		

NGR 47-006-050 **College of William And Mary** **3435**
Precise measurement of charged defects in III-V compound

Period	Obligations	
04/13/70-05/31/73	FY73:	TOTAL: \$49,035
Prin. Invest.	NASA Tech. Officer	CASE Category
Soest, J. F.	LARC/Fales, C. L.	13-Physics
(23-740 129-02-21) (23-740 114-03-03) (23-742 124-00-00)		

NGR 47-006-054 **College of William And Mary** **3436**
Space-related mammalian radiology studies

Period	Obligations	
02/01/72-01/31/74	FY73: \$100,000	TOTAL: \$253,905
Prin. Invest.	NASA Tech. Officer	CASE Category
Aceto, H., Jr.	JSC/Hoffman, R. A.	51-Biology
(72-970 970-51-63) (10-770 127-49-02)		

NGR 47-006-064 **College of William And Mary** **3437**
Correlation of trace element levels with the various diseased states in humans

Period	Obligations	
03/01/73-02/28/74	FY73: \$35,000	TOTAL: \$35,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Jolly, R. K.	WS/Holton, E. M.	59-Life Sci, NEC
(53-250 141-93-02) WS/Oberholtzer, J. D.		

NAS 1-4815 **Hampton Institute** **3438**
Conversion of government owned flight records into numerical tabulation

Period	Obligations	
07/01/65-06/01/76	FY73:	TOTAL: \$7,162
Prin. Invest.	NASA Tech. Officer	CASE Category
LARC/Jewel, J. W.		41-Aero Engr
(23-760 126-00-00)		

NAS 1-10898 **Hampton Institute** **3439**
Conversion of government-owned flight records into numerical tabulation

Period	Obligations	
06/01/71-06/30/73	FY73: \$25,575	TOTAL: \$51,775
Prin. Invest.	NASA Tech. Officer	CASE Category
LARC/Jewel, J. W., Jr.		41-Aero Engr
(23-704 501-38-11) (23-763 133-00-00)		

NGR 47-020-003 **Hampton Institute** **3440**
Learning and working experience with January-term students

Period	Obligations	
01/02/73-02/01/73	FY73: \$1,073	TOTAL: \$1,073
Prin. Invest.	NASA Tech. Officer	CASE Category
Horton, L.	LARC/Martin, D. J.	39-Env Sci, NEC
(23-701 599-85-00)		

NGR 47-020-005 **Hampton Institute** **3441**
High temperature kinetics studies of combustion processes by the shock tube technique

Period	Obligations	
03/21/73-05/31/74	FY73: \$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
HQ-PY/		13-Physics
(10-371 340-00-00)		

NGR 47-025-001 **Norfolk State College** **3442**
Standards of rider comfort noise vibration and age of rider as factors

Period	Obligations	
05/14/73-06/30/74	FY73: \$43,000	TOTAL: \$43,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Colegate, R. L.	HQ-PY/Pohly, J. G.	62-Social Aspects
(10-371 340-00-00) LARC/Stone, R. W.		

NAS 1-9434 **Old Dominion University** **3443**
Research in physical and engineering sciences

Period	Obligations	
07/23/69-11/01/72	FY73: \$22,279	TOTAL: \$825,804
Prin. Invest.	NASA Tech. Officer	CASE Category
LARC/Cone, C. D.		99-Multi-Discip
(23-704 501-22-05) (23-704 501-29-12) (23-704 502-01-02)		

NAS 1-9635 **Old Dominion University** **3444**
Studies relating to ejector performance, noise generation and suppression

Period	Obligations	
11/25/69-07/01/71	FY73:	TOTAL: \$24,815
Prin. Invest.	NASA Tech. Officer	CASE Category
Barna, P. S.	LARC/Maynard, J. D.	41-Aero Engr
(23-760 126-00-00) (23-760 126-61-14) (23-762 132-80-01)		

NAS 1-11707 **Old Dominion University** **3445**
Research in physical and life sciences

Period	Obligations	
07/24/72-07/16/74	FY73: \$280,715	TOTAL: \$280,715
Prin. Invest.	NASA Tech. Officer	CASE Category
Hill, H.	LARC/Royall, J. F.	49-Engr, NEC
(23-850 188-38-53) (23-850 863-11-00) (23-960 948-63-84)		

NAS 5-21816 **Old Dominion University** **3446**
ERTS data user investigation studies

Period	Obligations	
08/04/72-02/01/74	FY73: \$91,026	TOTAL: \$91,026
Prin. Invest.	NASA Tech. Officer	CASE Category
Marshall, H. G.	GSFC/Fihelly, A. W.	33-Oceanography
Copeland, G. E.		
Ludwick, J. C.		
(51-680 641-14-07) (51-680 641-14-09)		

NASA'S UNIVERSITY PROGRAM **VIRGINIA (Continued)**

NAS 9-13410 **Old Dominion University** **3447**
Investigation of zero gravity boiling and condensing in mechanical refrigeration systems

Period	Obligations	
05/01/73-04/30/74	FY73: \$15,000	TOTAL: \$15,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Keshock, E. G.	JSC/French, B. O.	46-Mech Engr
(72-970 970-52-20)		

NGL 47-003-007 **Old Dominion University** **3448**
A theoretical and experimental investigation of vortex-sink rate sensor

Period	Obligations	
08/31/67-05/01/74	FY73:	TOTAL: \$133,459
Prin. Invest.	NASA Tech. Officer	CASE Category
Goglia, G. L.	LARC/Hellbaum, R. F.	46-Mech Engr
(23-750 125-00-00)	(23-750 125-19-08)	

NGL 47-003-008 **Old Dominion University** **3449**
Studies in heterocyclic synthesis

Period	Obligations	
07/05/67-05/01/74	FY73: \$39,061	TOTAL: \$188,579
Prin. Invest.	NASA Tech. Officer	CASE Category
Williams, R. L.	LARC/Johnston, N. J.	12-Chemistry
(23-704 501-21-22)	LARC/Bell, V. L.	
	(23-740 129-03-22)	

NGL 47-003-012 **Old Dominion University** **3450**
Theoretical description of soil-tire interaction under moving wheel of aircraft

Period	Obligations	
05/15/68-05/01/73	FY73:	TOTAL: \$139,960
Prin. Invest.	NASA Tech. Officer	CASE Category
Cheng, R.	LARC/Leland, T. J.	44-Civil Engr
(23-760 126-00-00)	(23-760 126-61-12)	

NGL 47-003-039 **Old Dominion University** **3451**
Analysis of a cold jet on bodies of revolution in a subsonic free stream

Period	Obligations	
12/01/70-11/01/73	FY73: \$28,856	TOTAL: \$95,659
Prin. Invest.	NASA Tech. Officer	CASE Category
Ousterhout, D. S.	LARC/Gentry, G. L., Jr.	41-Aero Engr
(23-702 760-62-01)	LARC/Margason, R. J.	
	(23-760 721-00-00)	(23-760 721-01-11)

NGL 47-003-067 **Old Dominion University** **3452**
Interdisciplinary investigation of atmospheric processes and constituents of the mid-Atlantic coastal region

Period	Obligations	
05/10/72-05/31/76	FY73: \$75,000	TOTAL: \$225,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Kindle, E. C.	HQ-PY/Vitale, J. A.	39-Env Sci, NEC
(10-371 340-00-00)	WS/Krieger, R. L.	

NGR 47-003-040 **Old Dominion University** **3453**
Electron emission induced by electric field of a laser beam

Period	Obligations	
12/01/70-09/30/72	FY73:	TOTAL: \$13,186
Prin. Invest.	NASA Tech. Officer	CASE Category
Cox, J. L.	LARC/Outlaw, R. A.	13-Physics
(23-740 129-01-22)	LARC/Yeager, P. R.	

NGR 47-003-043 **Old Dominion University** **3454**
Investigation of sources of errors in low density gas structure measurements

Period	Obligations	
10/01/70-11/30/73	FY73: \$47,941	TOTAL: \$120,586
Prin. Invest.	NASA Tech. Officer	CASE Category
Pittman, M. A.	LARC/Outlaw, R. A.	13-Physics
Brock, F. J.		
Brock, F.		
(23-704 501-06-10)	(23-704 501-08-10)	

NGR 47-003-048 **Old Dominion University** **3455**
Exciton coupling in molecular crystals

Period	Obligations	
03/08/71-07/31/73	FY73:	TOTAL: \$40,885
Prin. Invest.	NASA Tech. Officer	CASE Category
Ake, R. L.	LARC/Phillips, D. H.	13-Physics
(23-740 114-03-03)	(23-740 129-02-21)	

NGR 47-003-052 **Old Dominion University** **3456**
Graduate research program in aeronautics and air transportation

Period	Obligations	
05/12/71-09/02/74	FY73: \$63,887	TOTAL: \$280,984
Prin. Invest.	NASA Tech. Officer	CASE Category
Roberts, A. S.	LARC/Martin, D. J.	41-Aero Engr
(23-704 501-15-82)	(23-760 126-13-10)	(23-760 136-13-01)

NGR 47-003-068 **Old Dominion University** **3457**
Aerol studies

Period	Obligations	
12/11/72-10/01/73	FY73: \$35,500	TOTAL: \$35,500
Prin. Invest.	NASA Tech. Officer	CASE Category
Harris, F. S.	LARC/Hulten, W. C.	31-Atmos Sci
(23-704 501-08-10)	LARC/McCormick, M. P.	
	(23-980 909-72-47)	(23-680 160-44-64)

NGR 47-003-069 **Old Dominion University** **3458**
Laser holographic interferometric techniques for structure inspection

Period	Obligations	
09/22/72-09/01/73	FY73: \$22,136	TOTAL: \$22,136
Prin. Invest.	NASA Tech. Officer	CASE Category
Chu, W. P.	LARC/McCormick, M. P.	13-Physics
(23-704 501-22-02)	LARC/Goad, J. H., Jr.	
	(23-830 180-32-51)	

NGR 47-003-071 **Old Dominion University** **3459**
Raman spectroscopy as a remote sensor of polyatomic ions in sea & estuarine water

Period	Obligations	
09/20/72-09/01/73	FY73: \$10,460	TOTAL: \$10,460
Prin. Invest.	NASA Tech. Officer	CASE Category
Bandy, A. R.	LARC/Houghton, W. M.	33-Oceanography
(23-704 502-23-56)		

NGR 47-003-077 **Old Dominion University** **3460**
Study of stratospheric gases catalytically reacting on alumina

Period	Obligations	
02/21/73-01/31/74	FY73: \$7,082	TOTAL: \$7,082
Prin. Invest.	NASA Tech. Officer	CASE Category
Cox, J. L.	LARC/Outlaw, R. A.	13-Physics
(23-980 909-72-47)		

NASA'S UNIVERSITY PROGRAM **VIRGINIA (Continued)**

NGR 47-003-078 **Old Dominion University** **3461**
Heavy-heavy nuclear reactions

Period	Obligations	
02/01/73-06/30/74	FY73: \$27,157	TOTAL: \$27,157
Prin. Invest.	NASA Tech. Officer	CASE Category
Khandelwal, G. S.	LARC/Wilson, J. W.	13-Physics
(23-704 502-21-32)		

NGR 47-003-082 **Old Dominion University** **3462**
Optimum geometric configuration of a space shuttle materials laboratory

Period	Obligations	
03/16/73-06/30/73	FY73: \$44,997	TOTAL: \$44,997
Prin. Invest.	NASA Tech. Officer	CASE Category
Clay, F. P.	LARC/Melfi, L. T., Jr.	13-Physics
Hueser, J. E.		
(23-850 188-36-56)	(23-980 975-90-95)	

NGR 47-003-083 **Old Dominion University** **3463**
Laboratory study of passenger subjective response to ideal and real vehicle vibration environments

Period	Obligations	
05/02/73-05/31/74	FY73: \$37,990	TOTAL: \$37,990
Prin. Invest.	NASA Tech. Officer	CASE Category
Kirby, R. H.	LARC/Mixson, J. S.	69-Psych, NEC
(23-704 501-29-12)		

NGT 47-003-028 **Old Dominion University** **3464**
Summer faculty fellowship program in engineering systems design

Period	Obligations	
11/14/69-03/31/74	FY73: \$101,384	TOTAL: \$366,640
Prin. Invest.	NASA Tech. Officer	CASE Category
Goglia, G. L.	HQ-PY/Carter, C. H.	49-Engr, NEC
(10-371 340-00-00)		

NGT 47-003-029 **Old Dominion University** **3465**
Summer faculty fellowship program in research

Period	Obligations	
11/14/69-03/31/74	FY73: \$105,257	TOTAL: \$450,390
Prin. Invest.	NASA Tech. Officer	CASE Category
Goglia, G. L.	HQ-PY/Carter, C. H.	49-Engr, NEC
(10-371 340-00-00)		

NAS 1-10210 **University of Virginia** **3466**
Master agreement for research and development in the physical and life sciences and engineering

Period	Obligations	
07/24/70-07/23/73	FY73: \$23,580	TOTAL: \$92,832
Prin. Invest.	NASA Tech. Officer	CASE Category
White, E. J.	LARC/Kelly, W. L.	45-Elec Engr
(23-762 132-80-01)	(23-702 768-81-01)	(23-710 113-32-04)

NAS 2-1554 **University of Virginia** **3467**
Biosatellite project experiment p-1145 effect of weightlessness on gross body composition of the rat

Period	Obligations	
09/14/64-07/31/73	FY73: \$37,994	TOTAL: \$596,155
Prin. Invest.	NASA Tech. Officer	CASE Category
Pitts, G. C.	ARC/Oyama, J.	51-Biology
(21-970 970-21-61)	(21-870 883-00-00)	(21-870 189-73-05)

NAS 5-21412 **University of Virginia** **3468**
Supernova monitor experiment

Period	Obligations	
05/03/71-08/31/73	FY73: \$4,375	TOTAL: \$9,375
Prin. Invest.	NASA Tech. Officer	CASE Category
Frederick, L. W.	GSFC/Bertsch, D. L.	99-Multi-Discip
(51-850 188-46-54)		

NAS 9-12752 **University of Virginia** **3469**
Principal investigator support of the lunar altitude profile determination

Period	Obligations	
06/13/72-07/01/75	FY73:	TOTAL: \$83,745
Prin. Invest.	NASA Tech. Officer	CASE Category
Junkins, J. L.	JSC/Hardee, S. N.	13-Physics
(72-910 914-49-00)		

NGL 47-005-014 **University of Virginia** **3470**
Multidisciplinary research in space-related sciences and technology

Period	Obligations	
06/12/64-03/01/73	FY73:	TOTAL: \$1,200,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Barnes, D. W.	HQ-PY/Redding, E. R.	42-Astro Engr
	HQ-KT/Richards, J.	
(10-370 183-00-00)	(10-740 129-00-00)	

NGL 47-005-050 **University of Virginia** **3471**
Investigation of the dynamic stability of the rigid body rotor

Period	Obligations	
05/31/66-08/01/74	FY73: \$30,000	TOTAL: \$265,113
Prin. Invest.	NASA Tech. Officer	CASE Category
Gunter, E. J.	LERC/Cunningham, R. E.	
	LERC/Anderson, W. J.	46-Mech Engr
(22-704 501-24-10)	(22-740 129-03-24)	

NGL 47-005-066 **University of Virginia** **3472**
Studies in astronomy and related scientific and engineering fields

Period	Obligations	
10/10/66-09/01/74	FY73: \$30,000	TOTAL: \$164,256
Prin. Invest.	NASA Tech. Officer	CASE Category
Fredrick, L. W.	HQ-SG/Roman, N. G.	11-Astronomy
	GSFC/Donn, B.	
(10-850 188-41-51)	(10-850 188-00-00)	

NGL 47-005-098 **University of Virginia** **3473**
Study of numerical methodology for dynamic buckling of shell structures

Period	Obligations	
03/07/69-09/01/74	FY73:	TOTAL: \$84,569
Prin. Invest.	NASA Tech. Officer	CASE Category
Haviland, J. K.	LARC/Yates, E. C., Jr.	41-Aero Engr
Barton, F. W.	LARC/Fulton, R. E.	
(23-742 124-00-00)	(23-760 126-14-16)	(23-765 742-73-01)

NGL 47-005-108 **University of Virginia** **3474**
Investigation of topics in structural dynamics

Period	Obligations	
05/01/69-09/01/73	FY73:	TOTAL: \$49,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Haviland, J. K.	LARC/Rainey, A. G.	41-Aero Engr
(23-760 126-00-00)	(23-760 126-14-14)	

NASA'S UNIVERSITY PROGRAM **VIRGINIA (Continued)**

NGL 47-005-151 **University of Virginia** **3475**
Systems approach to establishing acceptance ride quality criteria
Period *Obligations*
06/29/70-05/01/73 **FY73:** **TOTAL: \$80,000**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Allison, J. L. LARC/Clevenson, S. A. 49-Engr, NEC
LARC/Stephens, D. G.
(23-770 127-00-00)

NGR 47-005-093 **University of Virginia** **3476**
Investigation of the detectivity of radiation-produced defects levels on n- and p-type silicon and germanium
Period *Obligations*
04/10/68-06/30/73 **FY73:** **TOTAL: \$61,472**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mattauch, R. J. LARC/Gross, C. 49-Engr, NEC
LARC/Ocheltree, S. L.
(23-750 125-00-00) (23-750 125-24-04) (23-750 115-24-08)

NGR 47-005-112 **University of Virginia** **3477**
Development of the research potential of cold balance
Period *Obligations*
12/22/69-10/01/73 **FY73: \$60,000** **TOTAL: \$270,938**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Zapata, R. N. LARC/Hamlet, I. L. 41-Aero Engr
LARC/Kilgore, R. A.
(23-704 501-06-09) (23-760 126-63-12) (23-760 136-13-01)

NGR 47-005-145 **University of Virginia** **3478**
Performance evaluation capabilities for the design of physical systems
Period *Obligations*
04/22/70-05/31/74 **FY73: \$62,000** **TOTAL: \$119,910**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Pilkey, W. D. LARC/Sewall, J. L. 46-Mech Engr
LARC/Parrish, R. V.
(23-704 502-32-02) (23-704 501-22-05) (23-742 124-00-00)

NGR 47-005-153 **University of Virginia** **3479**
Study of the use of controlled modulation of optical image to astrometrical problems
Period *Obligations*
02/16/71-07/31/72 **FY73:** **TOTAL: \$37,466**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Frederick, L. W. HQ-SG/Roman, N. G. 11-Astronomy
HQ-SG/Ott, E. J.
(10-850 188-41-51)

NGR 47-005-172 **University of Virginia** **3480**
Interpretation of surface features and surface processes on Mars
Period *Obligations*
03/03/71-08/30/73 **FY73:** **TOTAL: \$68,190**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Dolan, R. HQ-SL/Allingham, J. W. 32-Gelological Sci
HQ-SL/Dwornik, S. E.
(10-840 384-50-80)

NGR 47-005-176 **University of Virginia** **3481**
Trace element analysis of mineral separates and determination of partition coefficients
Period *Obligations*
06/07/71-08/31/73 **FY73:** **TOTAL: \$21,980**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Allen, R. O. HQ-SM/Bryson, R. P. 32-Gelological Sci
HQ-SM/Pomeroy, J. H.
(10-810 195-42-67) (10-810 383-09-50)

NGR 47-005-179 **University of Virginia** **3482**
Stresses in ablation heat shields
Period *Obligations*
08/15/71-08/14/72 **FY73:** **TOTAL: \$8,960**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Mann, J. E. LARC/Dow, M. B. 21-Mathematics
Simmonds, J. E. LARC/Tompkins, S. S.
(23-742 117-07-03)

NGR 47-005-181 **University of Virginia** **3483**
Model for predicting passenger acceptance of STOL transportation systems
Period *Obligations*
06/15/71-02/28/74 **FY73: \$129,157** **TOTAL: \$231,157**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Kuhlthau, A. R. LARC/Schoonover, W. E., Jr. 41-Aero Engr
Jacobson, I. D. (23-701 791-91-51) (23-760 136-13-01)
(23-704 501-15-82)

NGR 47-005-186 **University of Virginia** **3484**
Vestibular system in a sample of amphibian and reptilian species
Period *Obligations*
10/12/71-11/15/73 **FY73: \$14,719** **TOTAL: \$28,837**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Ebbeson, S. O. ARC/Mahler, W. R. 59-Life Sci, NEC
(21-970 970-21-53)

NGR 47-005-202 **University of Virginia** **3485**
Flight research experiments to determine ride quality and passenger acceptance of air transportation
Period *Obligations*
06/14/73-06/15/73 **FY73: \$48,018** **TOTAL: \$48,018**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Jacobson, I. D. FRC/Wolf, T. D. 51-Biology
Kuhlthau, A. R.
(24-704 501-29-21)

NGR 47-005-208 **University of Virginia** **3486**
Effects of aircraft design on STOL ride quality simulator study
Period *Obligations*
06/07/73-06/30/74 **FY73: \$24,746** **TOTAL: \$24,746**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
LARC/ 41-Aero Engr
(23-704 501-29-12)

NGT 47-005-005 **University of Virginia** **3487**
Training of graduate students in space-related science and technology
Period *Obligations*
04/02/63-08/01/72 **FY73:** **TOTAL: \$813,098**
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Whitehead, W. D. HQ-PY/Carter, C. H. 99-Multi-Discip
(10-370 181-00-00)

NASA'S UNIVERSITY PROGRAM VIRGINIA (Continued)

NSR 47-005-070 **University of Virginia** **3488**
A three-week bio-space technology training program at NASA Wallops Station

Period	Obligations
04/27/67-12/01/71	FY73: \$1,270 TOTAL: \$205,965
Prin. Invest.	NASA Tech. Officer CASE Category
Hendricks, E. H.	HQ-MM/Schmid, R. C. 59-Life Sci, NEC
(10-870 189-00-00)	(10-370 181-00-00)

NGL 47-002-005 **Virginia Commonwealth University** **3489**
Radiation hazards to the eye

Period	Obligations
06/25/65-06/01/73	FY73: TOTAL: \$388,317
Prin. Invest.	NASA Tech. Officer CASE Category
Ham, W. T.	HQ-MM/Saunders, J. F. 51-Biology
	HQ-MM/Jones, W. L.
(23-770 127-00-00)	(10-770 127-49-41) (10-970 970-11-63)

NGL 47-002-020 **Virginia Commonwealth University** **3490**
Microbiological performance testing on water management subsystem for a four man space capsule

Period	Obligations
04/25/68-05/01/75	FY73: TOTAL: \$252,162
Prin. Invest.	NASA Tech. Officer CASE Category
Dalton, H. P.	LARC/Wilkins, J. R. 51-Biology
(23-770 127-00-00)	(23-770 127-53-41) (23-970 970-32-10)

NGR 47-002-018 **Virginia Commonwealth University** **3491**
Maximum permissible skin dose of penetrating electron radiation in the outer belt

Period	Obligations
05/20/68-03/30/73	FY73: TOTAL: \$337,000
Prin. Invest.	NASA Tech. Officer CASE Category
Lippincott, S. W.	HQ-MM/Saunders, J. F. 51-Biology
	HQ-MM/Jones, W. L.
(23-770 127-00-00)	(23-770 127-49-41) (10-970 970-11-63)

NGR 47-002-038 **Virginia Commonwealth University** **3492**
Investigation of physiological & biochemical effects in man

Period	Obligations
04/13/72-06/01/73	FY73: TOTAL: \$8,000
Prin. Invest.	NASA Tech. Officer CASE Category
Patterson, J. L.	JSC/Rummel, J. A. 53-Other Medical
(72-910 914-51-00)	

NGR 47-002-041 **Virginia Commonwealth University** **3493**
Isomer effects on polyimide properties

Period	Obligations
09/15/72-06/30/74	FY73: \$15,300 TOTAL: \$15,300
Prin. Invest.	NASA Tech. Officer CASE Category
Stump, B. L.	LARC/Johnston, N. J. 12-Chemistry
	LARC/Bell, V. I.
(23-704 501-21-20)	(23-704 501-21-26) (23-705 118-06-03)

NAS 1-10233 **Virginia Polytechnic Institute** **3494**
Effects of swirl and multiple injection points on co-axial mixing in supersonic flow

Period	Obligations
07/24/70-12/24/73	FY73: \$3,633 TOTAL: \$66,919
Prin. Invest.	NASA Tech. Officer CASE Category
Schetz, J. A.	LARC/Russin, W. R. 41-Aero Engr
	LARC/Anderson, G. Y.
(23-704 501-04-03)	

NAS 1-10646 **Virginia Polytechnic Institute** **3495**
Research and development in the life sciences, physical sciences, and engineering

Period	Obligations
02/12/71-05/31/74	FY73: \$186,076 TOTAL: \$281,414
Prin. Invest.	NASA Tech. Officer CASE Category
Wightman, J. P.	LARC/Byvik, C. E. 31-Atmos Sci
(23-704 502-21-29)	(23-704 502-27-01) (23-704 502-27-02)

NAS 3-14873 **Virginia Polytechnic Institute** **3496**
Research on pion interactions with nuclei

Period	Obligations
02/11/71-11/01/71	FY73: TOTAL: \$21,910
Prin. Invest.	NASA Tech. Officer CASE Category
Gotow, K.	LERC/Bercaw, R. W. 13-Physics
(22-740 129-02-23)	

NAS 5-21729 **Virginia Polytechnic Institute** **3497**
Geological landform analysis in the central piedmont of Virginia and North Carolina

Period	Obligations
05/02/72-11/15/73	FY73: TOTAL: \$2,164
Prin. Invest.	NASA Tech. Officer CASE Category
Glover, L., III	GSFC/Fihelly, A. W. 32-Geological Sci
(51-680 64-14-00)	

NAS 6-1863 **Virginia Polytechnic Institute** **3498**
Remote sensing in agriculture

Period	Obligations
07/14/70-07/13/73	FY73: \$21,810 TOTAL: \$73,422
Prin. Invest.	NASA Tech. Officer CASE Category
Pettry, D. E.	WS/Bettle, J. F. 39-Env Sci, NEC
Hutcheson, T. B.	WS/Scott, J. H.
(53-680 160-75-01)	

NAS 9-12601 **Virginia Polytechnic Institute** **3499**
Effects of Skylab environmental parameters on the intestinal flora of crew members

Period	Obligations
03/22/72-01/26/74	FY73: TOTAL: \$99,950
Prin. Invest.	NASA Tech. Officer CASE Category
Moore, W. E.	JSC/McQueen, J. L. 53-Other Medical
Holdeman, L. V.	
(72-960 961-50-00)	

NAS 9-12630 **Virginia Polytechnic Institute** **3500**
Viscous shock-layer method to predict surface pressure and heat transfer to distributions over two-dimensional nonanalytic shapes

Period	Obligations
04/17/72-06/30/74	FY73: TOTAL: \$94,242
Prin. Invest.	NASA Tech. Officer CASE Category
Lewis, C. H.	JSC/Curry, D. M. 41-Aero Engr
(72-920 982-42-00)	(72-920 986-15-00)

NGL 47-004-040 **Virginia Polytechnic Institute** **3501**
Study of electronic structure and spectra of IC compounds

Period	Obligations
04/25/68-12/01/72	FY73: TOTAL: \$44,413
Prin. Invest.	NASA Tech. Officer CASE Category
Schug, J. C.	LARC/Phillips, D. H. 12-Chemistry
	LARC/Hendricks, H. D.
(23-740 129-00-00)	(23-750 125-00-00)

NASA'S UNIVERSITY PROGRAM
VIRGINIA (Continued)

NGL 47-004-067 **Virginia Polytechnic Institute** **3502**
Measurement of the ground wind structure

<i>Period</i>	<i>Obligations</i>	
06/15/70-05/01/73	FY73:	TOTAL: \$267,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tieleman, H. W.	HQ-RO/Charak, M. T.	49-Engr; NEC
(10-370 183-00-00)	(10-760 126-00-00)	(10-760 126-63-10)

NGL 47-004-080 **Virginia Polytechnic Institute** **3503**
Synthesis, energetics, and chemical characterization of unusual molecules of interest in astronomy at temperatures below 100 K

<i>Period</i>	<i>Obligations</i>	
04/19/71-06/01/74	FY73:	TOTAL: \$61,960
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McGee, H. A.	HQ-SL/	11-Astronomy
(10-840 185-47-82)		

NGR 47-004-070 **Virginia Polytechnic Institute** **3504**
Laminar flow with suction downstream of a rearward-facing step in supersonic flow

<i>Period</i>	<i>Obligations</i>	
10/01/70-09/01/71	FY73:	TOTAL: \$59,307
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Lewis, C. H.	LARC/Swann, R. T.	41-Aero Engr
(23-742 124-07-26)	LARC/Moss, J. N.	(23-742 117-07-03)

NGR 47-004-076 **Virginia Polytechnic Institute** **3505**
Photoelastic influence of boundary layer effects

<i>Period</i>	<i>Obligations</i>	
03/16/71-09/14/73	FY73:	TOTAL: \$38,683
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Smith, C. W.	LARC/Newman, J. C., Jr.	46-Mech Engr
(23-740 134-03-21)	LARC/Poe, C. C., Jr.	(23-760 737-54-12)

NGR 47-004-082 **Virginia Polytechnic Institute** **3506**
Oxidation behavior of dispersion-stabilized alloys exposed to a dynamic high temperature environment

<i>Period</i>	<i>Obligations</i>	
04/23/71-06/30/73	FY73:	TOTAL: \$50,877
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tenney, D. R.	LARC/Herring, H. W.	47-Materials Engr
(23-742 117-07-03)	LARC/Stein, B. A.	(23-742 124-07-26)

NGR 47-004-089 **Virginia Polytechnic Institute** **3507**
Stability analysis of developing supersonic channel flow

<i>Period</i>	<i>Obligations</i>	
08/23/71-07/01/72	FY73:	TOTAL: \$12,470
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leach, J. W.	LARC/Nagel, A. L.	41-Aero Engr
(23-760 136-13-04)		

NGR 47-004-090 **Virginia Polytechnic Institute** **3508**
Research program in aeronautics & air transportation systems

<i>Period</i>	<i>Obligations</i>	
07/01/71-06/30/73	FY73: \$100,000	TOTAL: \$189,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bandy, A. R.	LARC/Martin, D. J.	41-Aero Engr
Copeland, G. E.		
(23-704 501-15-82)	(23-760 136-13-01)	

NGR 47-004-091 **Virginia Polytechnic Institute** **3509**
Influence of polarization on millimeter wave propagation through rain

<i>Period</i>	<i>Obligations</i>	
01/01/72-12/31/73	FY73: \$20,000	TOTAL: \$73,648
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Bostian, C. W.	GSFC/Hirschmann, E.	45-Elec Engr
Stutzman, W. L.		
(51-620 164-21-72)	(51-620 164-06-58)	

NGR 47-004-093 **Virginia Polytechnic Institute** **3510**
Study iron (2+) magnesium distribution in synthetic and lunar calcic pyroxenes

<i>Period</i>	<i>Obligations</i>	
12/01/71-09/01/73	FY73:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gibbs, G. V.	GSFC/Walter, L. S.	12-Chemistry
(51-910 914-40-00)		

NGR 47-004-097 **Virginia Polytechnic Institute** **3511**
Diffusion behavior of a two-phase metal matrix composite exposed to a high temperature environment

<i>Period</i>	<i>Obligations</i>	
02/17/72-12/31/73	FY73:	TOTAL: \$9,968
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Tenney, D. R.	LARC/Herring, H. W.	47-Materials Engr
	LARC/Stein, B. A.	
(23-740 134-03-23)		

NGR 47-004-098 **Virginia Polytechnic Institute** **3512**
The stability of motion of satellites with long flexible appendages

<i>Period</i>	<i>Obligations</i>	
05/01/72-11/30/73	FY73: \$10,625	TOTAL: \$35,525
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meiurovitch, L.	GSFC/Fedor, J. V.	42-Astro Engr
	GSFC/Bell, L. W.	
(51-850 877-11-00)	(51-850 861-41-00)	

NGR 47-004-100 **Virginia Polytechnic Institute** **3513**
The stability of motion of satellites with cavities partially filled with liquid

<i>Period</i>	<i>Obligations</i>	
08/01/72-07/01/73	FY73: \$24,900	TOTAL: \$24,900
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Meiurovitch, L.	GSFC/Hrastar, J. A.	42-Astro Engr
Neyfeh, A. H.	GSFC/Fedor, J. V.	
(51-680 160-44-52)		

NGR 47-004-101 **Virginia Polytechnic Institute** **3514**
Mechanical behavior of composite reinforced metals

<i>Period</i>	<i>Obligations</i>	
08/01/72-07/01/73	FY73: \$28,854	TOTAL: \$28,854
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Herakovitch, C. T.	LARC/Davis, J. G., Jr.	
	LARC/Pride, R. A.	47-Materials Engr
(23-704 501-22-03)		

NASA'S UNIVERSITY PROGRAM **VIRGINIA (Continued)**

NGR 47-004-102 **Virginia Polytechnic Institute** **3515**
Study of diffraction effects in waveguide lens
Period *Obligations*
09/01/72-08/01/73 FY73: TOTAL: \$30,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Galindo, V. GSFC/Dod, L. R. 45-Elec Engr
Stutzman, W. L.
(51-620 164-21-54)

NGR 47-004-103 **Virginia Polytechnic Institute** **3516**
Synthesis of multiple shaped beam antenna patterns
Period *Obligations*
09/01/72-08/01/73 FY73: TOTAL: \$25,150
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Stutzman, W. L. GSFC/Dod, L. R. 45-Elec Engr
Galindo, V.
(51-620 164-21-54)

NGR 47-004-106 **Virginia Polytechnic Institute** **3517**
Optimization of skin friction reduction in supersonic flow by fluid injection
Period *Obligations*
05/01/73-04/30/74 FY73: \$45,000 TOTAL: \$45,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Schetz, J. A. LARC/Beckwith, J. E. 41-Aero Engr
Lewis, C. H. LARC/Carey, A. M.
(23-701 599-85-00)

NGR 47-004-108 **Virginia Polytechnic Institute** **3518**
Correlation of creep rate with microstructural changes during high temperature creep
Period *Obligations*
06/08/72-09/30/73 FY73: TOTAL: \$54,863
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lyton, J. L. LARC/Herring, H. W. 47-Materials Engr
LARC/Stein, B. A.
(23-740 134-03-20)

NGR 47-004-109 **Virginia Polytechnic Institute** **3519**
Propagation and instability of waves in ducts with varying cross sections
Period *Obligations*
09/01/72-08/01/73 FY73: \$63,998 TOTAL: \$63,998
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Nayfeh, A. H. LARC/Zorumski, W. E. 13-Physics
LARC/Lansing, D. L.
(23-704 501-24-01)

NGR 47-004-114 **Virginia Polytechnic Institute** **3520**
Crash safety of general aviation aircraft
Period *Obligations*
09/01/72-12/31/73 FY73: \$56,283 TOTAL: \$56,283
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Melosh, R. J. LARC/Hayduk, R. J. 49-Engr, NEC
Swift, G. W. (23-702 760-60-01)

NGR 47-004-116 **Virginia Polytechnic Institute** **3521**
Investigation of digital flight control systems
Period *Obligations*
01/01/73-12/31/73 FY73: \$12,702 TOTAL: \$12,702
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hasdorff, I. LARC/Montgomery, R.C. 41-Aero Engr
Lutze, F. H. LARC/Bird, J. D.
(23-702 766-75-02)

NGL 47-014-009 **Virginia State College** **3522**
Numerical treatment of sound propagation through a duct
Period *Obligations*
06/29/73-06/30/76 FY73: \$50,500 TOTAL: \$50,500
Prin. Invest. *NASA Tech. Officer* *CASE Category*
HQP-PY/ 21-Mathematics
(10-371 340-00-00)

NGR 47-014-004 **Virginia State College** **3523**
Analysis of Martian surface, its origin & theory
Period *Obligations*
01/24/72-12/14/73 FY73: \$14,434 TOTAL: \$22,234
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Gipson, M., Jr. HQ-SL/Dwornik, S. E. 32-Geological Sci
HQP-SL/Allingham, J. W.
(10-840 384-50-80)

NGR 47-014-005 **Virginia State College** **3524**
Numerical treatment of sound propagation through a duct
Period *Obligations*
05/11/72-04/30/73 FY73: TOTAL: \$24,366
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Agrawal, K. M. HQ-PY/Pohly, J. G. 41-Aero Engr
LARC/Lansing, D. L.
(10-371 340-00-00)

NGR 47-014-006 **Virginia State College** **3525**
Research program in nuclear and solid state physics
Period *Obligations*
07/03/72-08/01/73 FY73: \$16,263 TOTAL: \$16,263
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Shonoch, C. E. HQ-PY/Pohly, J. G. 13-Physics
LARC/Beck, S. M.
(10-371 340-00-00)

NGR 47-014-007 **Virginia State College** **3526**
Industrial arts curriculum development
Period *Obligations*
01/15/73-01/14/74 FY73: \$12,956 TOTAL: \$12,956
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Van Dyke, A. LARC/Mehrens, H. E. 42-Astro Engr
LARC/Martin, D. J.
(23-701 599-85-00)

WASHINGTON

NAS 1-9694 **University of Washington** **3527**
Participation in the science planning for the Viking 1975 missions in the area of meteorology
Period *Obligations*
04/27/70-03/31/77 FY73: \$25,580 TOTAL: \$50,400
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Leovy, C. B. LARC/Soffen, G. A. 13-Physics
(23-840 815-20-00)

**NASA'S UNIVERSITY PROGRAM
WASHINGTON (Continued)**

NGR 48-002-129 **University of Washington** **3542**
Carbon materials for aerospace refractory applications

<i>Period</i>	<i>Obligations</i>	
09/10/71-05/31/74	FY73: \$10,000	TOTAL: \$22,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Fischbach, D. B.	LARC/Heyson, H. H.	47-Materials Engr
	LARC/Buckley, J. D.	
(23-704 502-21-20)		

NGR 48-002-130 **University of Washington** **3543**
Models of primordial self-replicating systems

<i>Period</i>	<i>Obligations</i>	
07/19/72-04/01/75	FY73: \$13,500	TOTAL: \$13,500
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Gordon, M. P.	HQ-SL/Young, R. S.	51-Biology
(10-840 192-55-61)		

NGR 48-002-131 **University of Washington** **3544**
Cardiovascular responses in chaired primate

<i>Period</i>	<i>Obligations</i>	
03/20/72-04/01/74	FY73:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scher, A. M.	ARC/Sandler, H.	52-Clinical Med
(21-970 970-21-12)		

NGR 48-002-135 **University of Washington** **3545**
Cardiovascular responses in primate and man

<i>Period</i>	<i>Obligations</i>	
05/06/72-10/01/73	FY73:	TOTAL: \$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Scher, A. M.	JSC/Jackson, M. M.	51-Biology
(72-910 914-51-00)		

NGR 48-002-139 **University of Washington** **3546**
Mars atmosphere dynamics related to Mariner 9 observations

<i>Period</i>	<i>Obligations</i>	
05/04/72-12/15/72	FY73:	TOTAL: \$3,082
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leovy, C. B.	ARC/Reynolds, R. T.	11-Astronomy
(21-850 188-41-51)		

NGR 48-002-141 **University of Washington** **3547**
Graduate research program in aeronautics & air transportation

<i>Period</i>	<i>Obligations</i>	
05/10/72-09/14/75	FY73:	TOTAL: \$130,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Kippenhan, C. J.	ARC/Anderson, A. E.	41-Aero Engr
	ARC/Watson, E. C.	
(21-760 136-63-02)		

NGR 48-002-142 **University of Washington** **3548**
Analysis of continuum channel light curves

<i>Period</i>	<i>Obligations</i>	
10/03/72-08/01/73	FY73: \$24,971	TOTAL: \$24,971
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Greene, T. F.	HQ-SL/Brunk, W. E.	11-Astronomy
	HQ-SL/Fellows, R. F.	
(10-840 196-41-80)		

NGR 48-002-144 **University of Washington** **3549**
Study sound generation in subsonic rotors

<i>Period</i>	<i>Obligations</i>	
06/09/72-12/14/73	FY73:	TOTAL: \$29,990
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Chalupnik, J. D.	ARC/Hodder, B. K.	41-Aero Engr
	ARC/Atencio, A.	
(21-760 136-9X-00)		

NGR 48-002-149 **University of Washington** **3550**
Lunar sample analysis

<i>Period</i>	<i>Obligations</i>	
10/01/72-01/31/74	FY73: \$34,300	TOTAL: \$34,300
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Ghose, S.	JSC/Harris, J. W.	13-Physics
(72-910 914-40-00)		

NGR 48-002-153 **University of Washington** **3551**
Classification and mapping of planetary soils

<i>Period</i>	<i>Obligations</i>	
02/12/73-10/31/73	FY73: \$3,000	TOTAL: \$3,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Vgolihi, F. C.	HQ-SL/Dwornik, S. E.	32-Geological Sci
	HQ-SL/Allingham, J. W.	
(10-840 384-50-80)		

NGR 48-002-161 **University of Washington** **3552**
Investigation of Mars atmospheric general circulation

<i>Period</i>	<i>Obligations</i>	
07/01/73-10/31/73	FY73: \$5,166	TOTAL: \$5,166
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Leovy, C. B.	ARC/Pollack, J. B.	31-Atmos Sci
	ARC/Reynolds, R. T.	
(21-840 185-47-67)		

NGT 48-002-007 **University of Washington** **3553**
Training of graduate students in space-related science and technology

<i>Period</i>	<i>Obligations</i>	
04/09/63-08/01/72	FY73:	TOTAL: \$749,928
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
McCarthy, J. L.	HQ-PY/Carter, C. H.	99-Multi-Discip
(10-370 181-00-00)		

WEST VIRGINIA

NGL 49-001-001 **West Virginia University** **3554**
Space-related studies in physical, life & engineering sciences

<i>Period</i>	<i>Obligations</i>	
10/10/63-09/01/72	FY73:	TOTAL: \$550,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Wilson, M. F.	HQ-PY/Quinn, H. B.	99-Multi-Discip
	HQ-PY/Redding, E. R.	
(10-370 183-00-00)		

NASA'S UNIVERSITY PROGRAM **WEST VIRGINIA (Continued)**

NGL 49-001-019 **West Virginia University** **3555**
Effect of changing gravity & weightlessness on vasopress in control systems

Period	FY73:	Obligations	TOTAL:
06/02/66-02/01/72			\$135,344
Prin. Invest.	NASA Tech. Officer	CASE Category	
Moran, W. H.	ARC/Danellis, J. V.	52-Clinical Med	
(21-770 127-00-00)	(10-770 127-00-00)		

NGR 49-001-048 **West Virginia University** **3556**
Weightless analog study of particle deposition in human lung

Period	FY73:	Obligations	TOTAL:
04/28/70-04/30/75	\$42,500		\$222,450
Prin. Invest.	NASA Tech. Officer	CASE Category	
Leovy, C. B.	ARC/Pollack, J. B.	52-Clinical Med	
	ARC/Reynolds, R. T.		
(21-970 970-21-35)	(21-770 127-00-00)	(21-770 127-49-40)	

NGR 49-001-056 **West Virginia University** **3557**
Analysis of microwave radiometer measurement of a water tank surface

Period	FY73:	Obligations	TOTAL:
04/20/72-05/14/74	\$31,994		\$43,989
Prin. Invest.	NASA Tech. Officer	CASE Category	
Balanis, C. A.	LARC/Johnson, J. W.	45-Elec Engr	
	LARC/Kendall, B. M.		
(23-680 160-20-54)			

NGR 49-001-061 **West Virginia University** **3558**
Technology to improve rural housing, utility system, and water sewage in West Virginia

Period	FY73:	Obligations	TOTAL:
05/31/73-12/31/73	\$19,373		\$19,373
Prin. Invest.	NASA Tech. Officer	CASE Category	
Steinhardt, E.	LARC/Kirby, C. E.	39-Env Sci, NEC	
(23-250 141-93-02)			

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NGR 50-001-009 **Marquette University** **3559**
Study of problems relating to the precise determination of the altitude of a spin stabilized spacecraft

Period	FY73:	Obligations	TOTAL:
06/11/68-12/31/72			\$80,975
Prin. Invest.	NASA Tech. Officer	CASE Category	
Foudriat, E. C.	LARC/Dodgen, J. A.	45-Elec Engr	
(23-750 125-00-00)	(23-750 125-17-20)		

NGR 50-001-010 **Marquette University** **3560**
Study of improved time capabilities for geodetic satellites

Period	FY73:	Obligations	TOTAL:
03/24/69-03/01/73			\$12,618
Prin. Invest.	NASA Tech. Officer	CASE Category	
Markowitz, W.	HQ-ER/Swetnick, M. T.	13-Physics	
	HQ-ES/Milwitzky, B.		
(10-680 160-00-00)	(10-680 160-79-51)		

NGR 50-008-001 **University of Wisconsin - Green Bay** **3561**
Study of blood flow

Period	FY73:	Obligations	TOTAL:
04/19/71-09/01/73	\$17,300		\$33,600
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kaufman, W. C.	JSC/Waligora, J. M.	51-Biology	
	JSC/Horrigan, D. J.		
(72-970 970-51-14)	(72-910 914-50-00)		

NAS 2-6759 **University of Wisconsin - Madison** **3562**
Design breadboard optics system

Period	FY73:	Obligations	TOTAL:
01/04/72-05/01/72			\$9,985
Prin. Invest.	NASA Tech. Officer	CASE Category	
Scherb, F.	ARC/Wolfe, J. H.	19-Phys Sci, NEC	
	ARC/Mihalov, J. D.		
(21-840 186-68-68)			

NAS 2-7314 **University of Wisconsin - Madison** **3563**
Environmental factors controlling growth

Period	FY73:	Obligations	TOTAL:
10/24/72-09/30/73	\$14,000		\$14,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Tibbetts, T. W.	ARC/Taketa, S. T.	49-Engr, NEC	
(21-970 970-21-61)			

NAS 3-15085 **University of Wisconsin - Madison** **3564**
Microwave metal thickness detector

Period	FY73:	Obligations	TOTAL:
03/15/71-12/01/72	\$4,321		\$30,168
Prin. Invest.	NASA Tech. Officer	CASE Category	
Beyer, J. B.	LERC/Barrett, C. A.	47-Materials Engr	
(22-740 129-03-28)			

NAS 5-1348 **University of Wisconsin - Madison** **3565**
Design, development, fabrication, test, data reduction and evaluation of astronomical experiment

Period	FY73:	Obligations	TOTAL:
01/19/72-12/31/73	\$798,000		\$7,395,000
Prin. Invest.	NASA Tech. Officer	CASE Category	
Code, A. D.	GSFC/White, W. A.	11-Astronomy	
(51-850 831-22-00)			

NAS 5-11068 **University of Wisconsin - Madison** **3566**
IMP-H & J solar wind deuterium experiment

Period	FY73:	Obligations	TOTAL:
05/06/68-08/00/72	\$6,175		\$423,875
Prin. Invest.	NASA Tech. Officer	CASE Category	
Scherb, F.	GSFC/Davis, M. A.	13-Physics	
	GSFC/Limberis, W. R.		
(51-850 861-41-00)			

NAS 5-11361 **University of Wisconsin - Madison** **3567**
Investigation of cosmic soft X-ray background radiation

Period	FY73:	Obligations	TOTAL:
12/21/70-12/30/73	\$737,000		\$1,461,285
Prin. Invest.	NASA Tech. Officer	CASE Category	
Kraushar, W. L.	GSFC/Thole, J. M.	13-Physics	
Wollershine, R.	GSFC/Donley, J. O.		
(51-850 821-32-00)			

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WISCONSIN (Continued)

NAS 5-11542 University of Wisconsin - Madison 3568
 Meteorological measurements from satellite platforms

Period	Obligations
06/01/68-07/01/73	FY73: TOTAL: \$753,358
Prin. Invest.	NASA Tech. Officer CASE Category
Suomi, V. E.	GSFC/Nordberg, W. 31-Atmos Sci
(51-680 160-00-00)	(51-680 160-44-51) (51-680 604-00-00)

NAS 5-21607 University of Wisconsin - Madison 3569
 Development of specification for a temperature sounder

Period	Obligations
03/11/71-01/01/72	FY73: TOTAL: \$76,716
Prin. Invest.	NASA Tech. Officer CASE Category
Suomi, V. E.	GSFC/Bandeen, W. R. 31-Atmos Sci
(51-680 601-13-00)	

NAS 5-21650 University of Wisconsin - Madison 3570
 Studies of soundings and imaging measurements from geostationary satellites

Period	Obligations
10/29/71-08/01/72	FY73: TOTAL: \$111,000
Prin. Invest.	NASA Tech. Officer CASE Category
Suomi, V. E.	GSFC/Bandeen, W. R. 31-Atmos Sci
(51-680 160-44-51)	(51-840 185-50-14)

NAS 5-21754 University of Wisconsin - Madison 3571
 Regional land use planning process

Period	Obligations
06/29/72-04/30/74	FY73: \$30,000 TOTAL: \$52,223
Prin. Invest.	NASA Tech. Officer CASE Category
Clapp, J. L.	GSFC/Stonesifer, G. R. 32-Geological Sci
(51-680 641-14-07)	(51-680 641-14-00)

NAS 5-21794 University of Wisconsin - Madison 3572
 Interactive man-computer system

Period	Obligations
07/25/72-07/01/73	FY73: \$199,020 TOTAL: \$199,020
Prin. Invest.	NASA Tech. Officer CASE Category
Erickson, R. W.	GSFC/Greaves, J. R. 31-Atmos Sci
(51-680 611-13-00)	

NAS 5-21798 University of Wisconsin - Madison 3573
 Studies of soundings and imaging measurements from geostationary satellites

Period	Obligations
08/01/72-08/01/73	FY73: \$100,000 TOTAL: \$100,000
Prin. Invest.	NASA Tech. Officer CASE Category
Suomi, V. E.	GSFC/Bandeen, W. R. 31-Atmos Sci
(51-680 160-44-51)	

NAS 8-21015 University of Wisconsin - Madison 3574
 Development & construction of an X-ray astronomy experiment

Period	Obligations
09/30/66-12/01/77	FY73: \$50,000 TOTAL: \$977,616
Prin. Invest.	NASA Tech. Officer CASE Category
Kraushaar, W. L.	MSFC/Ponder, T. W. 11-Astronomy
(62-960 948-80-81)	MSFC/Rose, S. D.

NAS 8-28733 University of Wisconsin - Madison 3575
 Metals melting and exothermic braising

Period	Obligations
05/25/72-12/24/73	FY73: \$32,000 TOTAL: \$47,000
Prin. Invest.	NASA Tech. Officer CASE Category
Adams, C. M.	MSFC/Hoppes, R. V. 46-Mech Engr
(62-960 948-90-95)	MSFC/Poorman, R. M.

NAS 9-12306 University of Wisconsin - Madison 3576
 Gamma ray absorptiometry

Period	Obligations
11/17/71-11/12/72	FY73: TOTAL: \$10,000
Prin. Invest.	NASA Tech. Officer CASE Category
Cameron, J. R.	JSC/Rambaut, P. C. 59-Life Sci, NEC
(72-960 948-60-90)	

NGL 50-002-001 University of Wisconsin - Madison 3577
 Space-related research in theoretical chemistry in molecular quantum & statistical mechanics

Period	Obligations
07/16/63-12/31/73	FY73: TOTAL: \$3,920,000
Prin. Invest.	NASA Tech. Officer CASE Category
Bock, R. M.	HQ-PY/Redding, E. R. 12-Chemistry
(10-370 183-00-00)	

NGL 50-002-013 University of Wisconsin - Madison 3578
 Investigations and studies of ultraviolet stellar spectra and associated instrumentation

Period	Obligations
05/20/64-03/01/75	FY73: TOTAL: \$1,603,420
Prin. Invest.	NASA Tech. Officer CASE Category
Code, A. D.	HQ-SG/Bogges, N. W. 11-Astronomy
(10-850 188-00-00)	HQ-SG/Roman, N. G. (10-850 879-11-00) (10-850 879-00-00)

NGL 50-002-044 University of Wisconsin - Madison 3579
 Research in cosmic and solar physics

Period	Obligations
10/25/65-12/31/75	FY73: \$166,000 TOTAL: \$1,362,661
Prin. Invest.	NASA Tech. Officer CASE Category
Kraushaar, W. L.	HQ-SG/Roman, N. G. 11-Astronomy
(10-850 879-11-00)	HQ-SG/Ott, E. J. (10-850 188-00-00)

NGL 50-002-078 University of Wisconsin - Madison 3580
 Study of methods to effect a more complete and rapid detection of human infectious agents

Period	Obligations
06/15/67-05/01/73	FY73: TOTAL: \$138,213
Prin. Invest.	NASA Tech. Officer CASE Category
Dick, E. C.	ARC/Mandel, A. D. 51-Biology
D'Alessio, D. J.	(21-770 127-00-00) (21-770 127-49-40)

NGL 50-002-114 University of Wisconsin - Madison 3581
 Multidisciplinary studies of social, economic, and political impact of recent advances in satellite meteorology

Period	Obligations
02/25/69-12/01/74	FY73: TOTAL: \$450,000
Prin. Invest.	NASA Tech. Officer CASE Category
Suomi, V. E.	HQ-PY/Vitale, J. A. 39-Env Sci, NEC
(10-680 160-00-00)	HQ-ER/Tepper, M. (10-371 340-00-00)

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WISCONSIN (Continued)

NGL 50-002-127 University of Wisconsin - Madison 3582
Multidisciplinary research in space science & engineering

Period	Obligations	
12/19/69-07/01/74	FY73: \$160,000	TOTAL: \$645,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Clapp, J. L.	HQ-PY/Vitale, J. A.	39-Env Sci, NEC
(10-371 340-00-00)		

NGL 50-002-148 University of Wisconsin - Madison 3583
Lunar sample analysis

Period	Obligations	
02/01/71-01/31/76	FY73: \$125,040	TOTAL: \$394,040
Prin. Invest.	NASA Tech. Officer	CASE Category
Haskin, L. A.	JSC/Harris, J. W.	12-Chemistry
(72-910 914-40-00)		

NGR 50-002-051 University of Wisconsin - Madison 3584
Applications of the direct photon absorption techniques for measuring bone-mineral content

Period	Obligations	
09/01/66-08/31/73	FY73: \$75,000	TOTAL: \$369,164
Prin. Invest.	NASA Tech. Officer	CASE Category
Cameron, J. R.	ARC/Young, D. R.	52-Clinical Med
(21-970 970-23-30)		

NGR 50-002-109 University of Wisconsin - Madison 3585
Environmental factors regulating circadian rhythms in phaseolus leaves

Period	Obligations	
04/10/70-06/30/72	FY73:	TOTAL: \$50,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Tibbitts, T. W.	HQ-MM/Saunders, J. F.	51-Biology
(10-870 189-00-00)		

NGR 50-002-116 University of Wisconsin - Madison 3586
A study of composite superconductors

Period	Obligations	
03/17/69-06/30/73	FY73: \$28,497	TOTAL: \$131,619
Prin. Invest.	NASA Tech. Officer	CASE Category
Boom, R. W.	LERC/Laurence, J. C.	47-Materials Engr
Worzala, F. J.	LERC/Coles, W. D.	
(22-704 503-10-02)		

NGR 50-002-140 University of Wisconsin - Madison 3587
Solar radiation within clouds

Period	Obligations	
07/30/70-08/31/73	FY73: \$72,466	TOTAL: \$292,091
Prin. Invest.	NASA Tech. Officer	CASE Category
Weinman, J. A.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Hipsher, H. F.	
(10-840 185-47-80)		

NGR 50-002-160 University of Wisconsin - Madison 3588
Pattern recognition and information processing in a microelectronic artificial neural network

Period	Obligations	
01/25/71-06/30/73	FY73:	TOTAL: \$100,490
Prin. Invest.	NASA Tech. Officer	CASE Category
Parmentier, R. D.	ARC/Rosenfeld, S. A.	21-Mathematics
Scott, A. C.		
Uhr, L.		
(10-740 129-04-21) (21-750 115-04-60)		

NGR 50-002-162 University of Wisconsin - Madison 3589
Solar wind physics

Period	Obligations	
01/26/71-12/31/74	FY73: \$55,000	TOTAL: \$150,619
Prin. Invest.	NASA Tech. Officer	CASE Category
Scherb, F.	HQ-SG/Kavanagh, L. D., Jr.	13-Physics
	HQ-SG/Ott, E. J.	
(10-850 188-36-55) (10-850 188-36-53)		

NGR 50-002-166 University of Wisconsin - Madison 3590
Fracture of cylindrical structural members

Period	Obligations	
04/01/71-11/01/71	FY73:	TOTAL: \$17,900
Prin. Invest.	NASA Tech. Officer	CASE Category
Johnson, M. W., Jr.	LERC/Misencik, J. A.	49-Engr, NEC
	LERC/Smith, G. T.	
(22-742 124-08-42)		

NGR 50-002-170 University of Wisconsin - Madison 3591
Outer planets missions definition study

Period	Obligations	
04/23/71-06/01/72	FY73:	TOTAL: \$8,351
Prin. Invest.	NASA Tech. Officer	CASE Category
Suomi, V. E.	HQ-SL/Mitz, M. A.	31-Atmos Sci
	HQ-SL/Keller, J. W.	
(10-840 186-68-68) (10-840 186-68-52)		

NGR 50-002-174 University of Wisconsin - Madison 3592
Prevention of transmission of human respiratory virus

Period	Obligations	
03/01/72-01/31/74	FY73: \$27,870	TOTAL: \$52,870
Prin. Invest.	NASA Tech. Officer	CASE Category
Dick, E. C.	ARC/Mandel, A. D.	52-Clinical Med
(21-970 970-21-25)		

NGR 50-002-183 University of Wisconsin - Madison 3593
Tissue & fluid changes by radionuclide absorption

Period	Obligations	
04/24/72-06/30/74	FY73: \$20,000	TOTAL: \$40,000
Prin. Invest.	NASA Tech. Officer	CASE Category
Mazess, R. B.	ARC/Young, D. R.	52-Clinical Med
(21-970 970-23-30)		

NGR 50-002-189 University of Wisconsin - Madison 3594
Cloud image processing for planetary flybys

Period	Obligations	
01/19/72-06/30/74	FY73:	TOTAL: \$19,297
Prin. Invest.	NASA Tech. Officer	CASE Category
Suomi, V. E.	HQ-SL/Fellows, R. F.	31-Atmos Sci
	HQ-SL/Dwornik, S. E.	
(10-840 185-47-81)		

NGR 50-002-191 University of Wisconsin - Madison 3595
Elimination of microbial flora and its effect on immunity to infection

Period	Obligations	
02/04/72-12/31/73	FY73: \$37,300	TOTAL: \$70,300
Prin. Invest.	NASA Tech. Officer	CASE Category
Balish, E.	ARC/Mandel, A. D.	52-Clinical Med
(21-970 970-21-25)		

NASA'S UNIVERSITY PROGRAM **WISCONSIN (Continued)**

NGR 50-002-199 **University of Wisconsin - Madison** **3596**
Planetary missions to the planet Venus

Period	Obligations	
03/14/72-07/01/72	FY73: TOTAL: \$1,282	
Prin. Invest.	NASA Tech. Officer	CASE Category
Weinman, J. A.	HQ-SL/Fellows, R. F.	31-Atmos Sci
(10-840 186-68-63)		

NGR 50-002-204 **University of Wisconsin - Madison** **3597**
Noninvasive measurement of central venous pressure

Period	Obligations	
05/08/72-04/30/73	FY73: TOTAL: \$15,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Weber, J. C.	ARC/Sandler, H.	45-Elec Engr
(21-970 970-23-30)	ARC/Rositano, S.	

NGR 50-002-215 **University of Wisconsin - Madison** **3598**
Investigation of cloud displacement data histicated model of the atmosphere

Period	Obligations	
03/01/73-02/28/74	FY73: \$39,634 TOTAL: \$39,634	
Prin. Invest.	NASA Tech. Officer	CASE Category
Suomi, V. E.	GSFC/Halem, M.	31-Atmos Sci
(51-680 408-02-02)	GSFC/Durocher, N. L.	

NAS 9-12931 **University of Wisconsin - Milwaukee** **3599**
Clustering analysis of unknown data

Period	Obligations	
06/23/72-06/14/73	FY73: TOTAL: \$23,801	
Prin. Invest.	NASA Tech. Officer	CASE Category
Northouse, R. A.	JSC/Holmes, Q. A.	19-Phys Sci, NEC
Eiger, D.		
(72-910 924-22-00)		

NGR 50-007-001 **University of Wisconsin - Milwaukee** **3600**
Dynamic response and flow visualization analyses for helicopter rotor blades

Period	Obligations	
01/02/71-01/01/74	FY73: \$44,950 TOTAL: \$134,889	
Prin. Invest.	NASA Tech. Officer	CASE Category
Bratanow, T.	LARC/Ward, J. F.	41-Aero Engr
(23-702 760-63-02)	LARC/Young, W. H.	
	(23-760 721-00-00)	(23-760 721-60-11)

WYOMING

NAS 5-21799 **University of Wyoming** **3601**
Analysis of ERTS-A imagery

Period	Obligations	
06/27/72-06/01/74	FY73: \$77,000 TOTAL: \$93,000	
Prin. Invest.	NASA Tech. Officer	CASE Category
Houston, R. S.	GSFC/Stonesifer, G. R.	32-Gelological Sci
(51-680 641-14-03)	(51-680 641-14-00)	

NAS 5-21818 **University of Wyoming** **3602**
Cooperative study of the geology of a test site in ice-free valleys of Antarctica

Period	Obligations	
10/11/72-01/01/74	FY73: \$7,002 TOTAL: \$7,002	
Prin. Invest.	NASA Tech. Officer	CASE Category
Houston, R. S.	GSFC/Fihelly, A. W.	32-Gelological Sci
(51-680 641-14-03)		

NAS 5-23028 **University of Wyoming** **3603**
OSO-J experiment definition study

Period	Obligations	
10/22/71-01/01/72	FY73: TOTAL: \$24,963	
Prin. Invest.	NASA Tech. Officer	CASE Category
Pepin, T. J.	GSFC/Thole, J. M.	31-Atmos Sci
(51-850 821-32-00)	GSFC/Douley, J. L.	

NAS 9-13298 **University of Wyoming** **3604**
Multidisciplinary study of Wyoming test sites

Period	Obligations	
03/27/73-10/31/74	FY73: \$88,800 TOTAL: \$88,800	
Prin. Invest.	NASA Tech. Officer	CASE Category
Houston, R. S.	JSC/Miller, M. L.	32-Gelological Sci
(72-960 948-63-83)		

NGL 51-001-010 **University of Wyoming** **3605**
Relative and absolute intensity measurement of microwave spectral lines in pure and dilute gases

Period	Obligations	
03/09/67-12/01/72	FY73: TOTAL: \$182,129	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rhinehart, E. A.	LARC/White, W. F.	13-Physics
(23-770 127-00-00)		

NGR 51-001-028 **University of Wyoming** **3606**
Air-borne aerosol measurements associated with clear-air turbulence

Period	Obligations	
05/05/70-09/30/72	FY73: TOTAL: \$53,571	
Prin. Invest.	NASA Tech. Officer	CASE Category
Rosen, J. M.	LARC/Hulten, W. C.	31-Atmos Sci
(23-760 126-00-00)	LARC/McCormick, M. P.	
	(23-760 126-61-13)	

NGR 51-001-033 **University of Wyoming** **3607**
Magnetospheric modulation effects on solar cosmic rays

Period	Obligations	
01/29/71-08/31/73	FY73: TOTAL: \$28,950	
Prin. Invest.	NASA Tech. Officer	CASE Category
Hofman, D.	HQ-SG/Hallenbeck, D. R.	13-Physics
(10-850 385-50-00)	HQ-SG/Schmerling, E. R.	

NGR 51-001-035 **University of Wyoming** **3608**
Search for relativistic magnetic charges in cosmic rays

Period	Obligations	
02/03/71-12/31/73	FY73: \$33,986 TOTAL: \$69,986	
Prin. Invest.	NASA Tech. Officer	CASE Category
Tompkins, D. R., Jr.	HQ-SG/Opp, A. G.	11-Astronomy
(10-850 188-46-52)	HQ-SG/Kavanagh, L. D.	

NASA'S UNIVERSITY PROGRAM **WYOMING (Continued)**

NGR 51-001-036 **University of Wyoming** **3609**
Measurement of meteoric dust from the lear jet
Period *Obligations*
05/17/71-09/01/72 FY73: \$18,000 TOTAL: \$52,778
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Hackwell, J. A. ARC/Mason, R. H. 31-Atmos Sci
ARC/Cameron, R. M.
(21-850 352-02-01) (10-850 352-02-01)

NGR 51-001-045 **University of Wyoming** **3610**
Dustsonde support for clear-air turbulence and air pollution studies
Period *Obligations*
07/01/72-06/30/73 FY73: TOTAL: \$24,847
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Rosen, J. M. LARC/Hulten, W. C. 31-Atmos Sci
LARC/McCormick, M. P.
(23-250 141-93-00)

VIRGIN ISLANDS

NGL 52-083-009 **College of Virgin Islands** **3611**
Reflection spectroscopy of lunar samples (Apollo 14-19)
Period *Obligations*
05/05/71-01/01/74 FY73: TOTAL: \$68,642
Prin. Invest. *NASA Tech. Officer* *CASE Category*
McCord, T. B. JSC/Harris, J. W. 19-Phys Sci, NEC
Adams, J. B.
Johnson, T. V.
(72-910 914-40-00)

NGR 52-083-003 **College of Virgin Islands** **3612**
Investigation of spectral reflectance properties of lunar and planetary surfaces
Period *Obligations*
04/30/69-12/31/74 FY73: TOTAL: \$134,239
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Adams, J. B. HQ-SM/Bryson, R. P. 32-Geological Sci
HQ-SM/Allenby, R. J.
(10-810 195-00-00) (10-810 195-42-66) (10-810 383-09-50)

CANADA

NGR 52-133-001 **Laval University** **3613**
Rb-87 gas cell study
Period *Obligations*
01/09/70-03/31/73 FY73: \$15,290 TOTAL: \$35,290
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Vanier, J. GSFC/Major, F. G. 45-Elec Engr
GSFC/Peters, H. E.
(51-750 115-21-10)

NGR 52-163-001 **University of New Brunswick** **3614**
Determination of NO2 molecular parameters necessary for atmospheric slant path transmittance calculations
Period *Obligations*
08/10/72-08/01/73 FY73: \$35,000 TOTAL: \$35,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Young, C. LARC/Reichle, H. G., Jr. 31-Atmos Sci
LARC/Russell, J. M., III
(23-680 160-20-56)

NGL 52-026-001 **University of Toronto** **3615**
Study exchange processes undergone by various molecules on striking at satellite velocities
Period *Obligations*
03/23/63-02/01/73 FY73: TOTAL: \$182,220
Prin. Invest. *NASA Tech. Officer* *CASE Category*
French, T. B. HQ-RA/Gessow, A. 41-Aero Engr
(10-740 129-00-00)

CHILE

NAS 5-1925 **University of Chile** **3616**
Maintenance & operation of minitrack facilities
Period *Obligations*
02/28/71-06/30/73 FY73: \$2,830,000 TOTAL: \$14,501,668
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Detigny, E. GSFC/Christie, C. J. 31-Atmos Sci
(51-500 311-20-10) (51-500 312-02-22)

ECUADOR

NAS 5-21224 **National Polytechnic Institute** **3617**
Training program in techniques required for NASA operations
Period *Obligations*
02/16/71-02/15/73 FY73: \$50,000 TOTAL: \$145,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Orellana, J. R. GSFC/McKeehan, H. B. 49-Engr, NEC
(51-500 311-20-10) (51-500 311-01-19)

GREAT BRITAIN

NGR 52-140-002 **Loughborough University of Technology** **3618**
Broadband noise generation by rotating blades
Period *Obligations*
03/12/71-12/31/72 FY73: TOTAL: \$33,000
Prin. Invest. *NASA Tech. Officer* *CASE Category*
Lowson, M. V. LARC/Cawthorn, J. M. 41-Aero Engr
LARC/Hubbard, H. H.
(23-760 126-61-14) (23-760 126-9X-00)

NASA'S UNIVERSITY PROGRAM GREAT BRITAIN (Continued)

NAS 2-5157 **University of Nottingham** **3619**
Tissue growth & reconstruction under conditions of space flight

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
11/26/68-11/01/71			\$70,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Weinbren, K.	ARC/Feller, D. D.	51-Biology	
(21-770 708-00-00)	(21-770 708-40-01)	(21-770 127-49-37)	

NEW ZEALAND

NGR 52-001-001 **University of Auckland** **3624**
Investigation of the propagation of radio signals from artificial satellites

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
03/31/60-11/30/72			\$108,610
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Titheridge, J. E.	HQ-SG/Schmerling, E. R.	31-Atmos Sci	
	HQ-SG/Hallenbeck, D. R.		
(10-850 385-36-00)	(10-850 873-00-00)	(10-850 188-00-00)	

ISRAEL

NGR 52-012-006 **Israel Institute of Technology** **3620**
Flutter suppression and gust alleviation using active controls

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
01/24/72-01/01/73			\$13,174
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Nissim, E.	LARC/	41-Aero Engr	
(23-760 136-14-02)			

NORWAY

NGR 52-155-002 **University of Oslo** **3625**
Photochemical models of the upper stratosphere and the mesosphere

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
02/00/32-04/30/73			\$10,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Hessvedt, E.	GSFC/Theon, J. S.	31-Atmos Sci	
	GSFC/Bandeem, W. R.		
(51-680 160-44-55)			

ITALY

NASW 2211 **University of Milan** **3621**
OFO-A post-mission data analysis and ground experimentation study

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
09/13/71-02/01/72			\$87,518
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Gualtierotti, T.	WS/Rossi, L. C.	61-Biol Aspects	
Rocca, E.			
Bracchi, F.			
(53-770 735-01-01)	(53-770 735-00-00)		

PERU

NASW 7 **University of Peru** **3626**
Operation of tracking station

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
12/01/68-06/01/79	\$60,000		\$3,237,512
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
	GSFC/	49-Engr, NEC	
(51-620 636-18-00)	(51-500 310-20-23)		

SWEDEN

NASR 174 **Uppsala University** **3627**
Investigating the highly ionized spectra of nitrogen and oxygen

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
12/01/65-05/01/76			\$56,481
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Bockasten, K.	HQ-SG/	12-Chemistry	
(10-850 188-00-00)			

NASW 1761 **University of Rome** **3622**
Launching and associated services at San Marco range

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
08/21/70-12/01/71	\$597,600		\$1,690,200
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
	HQ-SV/	49-Engr, NEC	
(10-830 490-02-01)	(10-830 490-01-01)		

NGR 52-028-004 **Uppsala University** **3628**
Inner ear research

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
12/01/72-11/30/73	\$15,000		\$15,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
Engstrom, H.	ARC/Mehler, W. R.	59-Life Sci, NEC	
	ARC/Winter, D.		
(21-970 970-21-11)			

NASW 2135 **University of Rome** **3623**
Backup data acquisition

<i>Period</i>	<i>FY73:</i>	<i>Obligations</i>	<i>TOTAL:</i>
10/21/71-06/01/72			\$50,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>	
	HQ-TN/	42-Astro Engr	
(10-500 311-00-00)			

NASA'S UNIVERSITY PROGRAM

WEST GERMANY

NSG 305	University of Munich	3629
Investigation of atmospheric properties based upon evaluation of infrared radiation data obtained from Tiros satellites		
<i>Period</i>	<i>Obligations</i>	
11/01/65-11/01/76	FY73:	TOTAL: \$5,000
<i>Prin. Invest.</i>	<i>NASA Tech. Officer</i>	<i>CASE Category</i>
Moller, F.	HQ-ER/	31-Atmos Sci
(10-680 160-00-00)		

NASA'S UNIVERSITY PROGRAM

APPENDIX A

CROSS INDEX BY GRANT/CONTRACT NUMBER

Entries are arranged alphanumerically. Grants are identifiable by prefix letters NGF, NGL, NGR, NGT and NSG. All other prefixes denote contracts.

GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.
AF306 24144	1950	NAS 1-11105	2983	NAS 2-6065	2745
NAS 1-4815	3438	NAS 1-11231	2624	NAS 2-6067	2927
NAS 1-5722	1787	NAS 1-11257	2025	NAS 2-6158	1268
NAS 1-6860	2412	NAS 1-11267	1825	NAS 2-6175	2254
NAS 1-8141	2024	NAS 1-11276	3241	NAS 2-6217	1269
NAS 1-9349	2679	NAS 1-11297	3134	NAS 2-6234	1270
NAS 1-9434	3443	NAS 1-11543	2625	NAS 2-6265	1114
NAS 1-9461	3430	NAS 1-11676	2492	NAS 2-6312	3064
NAS 1-9506	3274	NAS 1-11707	3445	NAS 2-6332	1271
NAS 1-9603	2893	NAS 1-11808	3431	NAS 2-6340	1826
NAS 1-9635	3444	NAS 1-11854	1257	NAS 2-6434	3280
NAS 1-9680	3121	NAS 1-11855	2693	NAS 2-6437	2255
NAS 1-9682	1258	NAS 1-11869	3232	NAS 2-6447	1115
NAS 1-9683	2743	NAS 1-11871	3044	NAS 2-6484	2682
NAS 1-9684	2246	NAS 1-12045	3063	NAS 2-6485	1372
NAS 1-9685	3283	NAS 1-12055	1973	NAS 2-6491	1272
NAS 1-9689	2879	NAS 1-12106	1624	NAS 2-6541	3528
NAS 1-9691	2247	NAS 1-12152	3429	NAS 2-6551	1909
NAS 1-9692	1259	NAS 1-12304	1724	NAS 2-6552	1524
NAS 1-9693	1779	NAS 1-12311	1177	NAS 2-6553	2028
NAS 1-9694	3527	NAS 1-12468	2015	NAS 2-6556	1179
NAS 1-9697	2490	NAS 2-1298	1650	NAS 2-6558	1599
NAS 1-9699	3358	NAS 2-1554	3467	NAS 2-6560	2783
NAS 1-9701	1260	NAS 2-1677	1261	NAS 2-6585	1625
NAS 1-9702	2248	NAS 2-1750	1262	NAS 2-6614	3211
NAS 1-9703	1176	NAS 2-2216	1251	NAS 2-6615	1626
NAS 1-9705	2622	NAS 2-2320	1263	NAS 2-6624	1864
NAS 1-9812	2249	NAS 2-2432	3099	NAS 2-6632	1569
NAS 1-9958	2424	NAS 2-2640	1109	NAS 2-6633	1445
NAS 1-10040	2955	NAS 2-3082	3394	NAS 2-6634	2956
NAS 1-10048	2048	NAS 2-3303	1264	NAS 2-6644	2218
NAS 1-10075	2623	NAS 2-4151	2573	NAS 2-6649	1466
NAS 1-10090	2803	NAS 2-4671	1265	NAS 2-6657	1446
NAS 1-10107	1465	NAS 2-5143	1266	NAS 2-6684	2895
NAS 1-10210	3466	NAS 2-5157	3619	NAS 2-6700	1865
NAS 1-10233	3494	NAS 2-5587	1267	NAS 2-6705	2626
NAS 1-10277	2894	NAS 2-5601	1908	NAS 2-6706	1273
NAS 1-10282	2804	NAS 2-5602	1523	NAS 2-6717	1373
NAS 1-10341	2087	NAS 2-5603	2026	NAS 2-6740	1180
NAS 1-10373	1518	NAS 2-5604	1113	NAS 2-6759	3562
NAS 1-10388	1649	NAS 2-5606	1178	NAS 2-6763	1447
NAS 1-10492	2217	NAS 2-5608	1598	NAS 2-6778	3529
NAS 1-10493	2849	NAS 2-5610	2782	NAS 2-6779	2957
NAS 1-10511	2491	NAS 2-5643	2744	NAS 2-6791	1467
NAS 1-10646	3495	NAS 2-5668	1443	NAS 2-6792	2958
NAS 1-10677	2250	NAS 2-5795	2681	NAS 2-6802	1984
NAS 1-10693	2251	NAS 2-5826	1444	NAS 2-6813	2805
NAS 1-10898	3439	NAS 2-5951	2253	NAS 2-6916	1525
NAS 1-10967	3152	NAS 2-6015	2425	NAS 2-7059	1584
NAS 1-11092	2252	NAS 2-6057	2426	NAS 2-7078	2564
NAS 1-11104	2982	NAS 2-6064	2027	NAS 2-7126	1274

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GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.
NAS 2-7152	1448	NAS 5-9306	2427	NAS 5-11415	2129
NAS 2-7159	1374	NAS 5-9307	1652	NAS 5-11425	1117
NAS 2-7187	2627	NAS 5-9309	1280	NAS 5-11426	2088
NAS 2-7199	1275	NAS 5-9311	3361	NAS 5-11431	2036
NAS 2-7205	1276	NAS 5-9312	1181	NAS 5-11438	2498
NAS 2-7251	1468	NAS 5-9314	2695	NAS 5-11444	1118
NAS 2-7262	2256	NAS 5-9317	3212	NAS 5-11450	2264
NAS 2-7273	3000	NAS 5-9327	1653	NAS 5-11456	1119
NAS 2-7314	3563	NAS 5-9328	2428	NAS 5-11542	3568
NAS 2-7326	1570	NAS 5-9366	1911	NAS 5-11674	1473
NAS 2-7342	1449	NAS 5-9444	3362	NAS 5-11687	2499
NAS 2-7350	2628	NAS 5-9558	2683	NAS 5-11694	2611
NAS 2-7396	1627	NAS 5-9883	1674	NAS 5-11909	2265
NAS 2-7435	3284	NAS 5-10102	1281	NAS 5-11911	3242
NAS 2-7439	2257	NAS 5-10167	1472	NAS 5-11947	2266
NAS 2-7440	1469	NAS 5-10362	1377	NAS 5-11988	3243
NAS 2-7476	1116	NAS 5-10363	1526	NAS 5-20282	2567
NAS 2-7503	1450	NAS 5-10364	1527	NAS 5-21038	2435
NAS 2-7516	1451	NAS 5-10387	3322	NAS 5-21055	1530
NAS 2-7519	1452	NAS 5-11002	2261	NAS 5-21147	2436
NAS 2-7562	1375	NAS 5-11003	3363	NAS 5-21224	3617
NAS 2-7567	1376	NAS 5-11011	3364	NAS 5-21394	2718
NAS 2-7615	2629	NAS 5-11037	1912	NAS 5-21412	3468
NAS 2-7616	1252	NAS 5-11038	1378	NAS 5-21418	2122
NAS 2-7620	2258	NAS 5-11039	2030	NAS 5-21432	2684
NAS 2-7637	1277	NAS 5-11054	2609	NAS 5-21433	2685
NAS 2-7648	2259	NAS 5-11060	2495	NAS 5-21484	1120
NAS 2-7655	2885	NAS 5-11062	2262	NAS 5-21505	1601
NAS 2-7684	2260	NAS 5-11063	2147	NAS 5-21555	3132
NAS 3-6926	2709	NAS 5-11064	2031	NAS 5-21607	3569
NAS 3-8545	3180	NAS 5-11066	1182	NAS 5-21650	3570
NAS 3-12426	1239	NAS 5-11067	1913	NAS 5-21661	1121
NAS 3-13200	2493	NAS 5-11068	3566	NAS 5-21666	2806
NAS 3-14336	1278	NAS 5-11073	2429	NAS 5-21684	1283
NAS 3-14362	1279	NAS 5-11074	2032	NAS 5-21714	1284
NAS 3-14873	3496	NAS 5-11080	1528	NAS 5-21720	3275
NAS 3-15085	3564	NAS 5-11081	1529	NAS 5-21726	3155
NAS 3-15383	1827	NAS 5-11082	2263	NAS 5-21729	3497
NAS 3-17213	1628	NAS 5-11128	2430	NAS 5-21732	2896
NAS 3-17353	2952	NAS 5-11167	2033	NAS 5-21733	1285
NAS 3-17357	2013	NAS 5-11173	2496	NAS 5-21749	2602
NAS 3-17855	3065	NAS 5-11174	2431	NAS 5-21753	3427
NAS 3-17857	1600	NAS 5-11191	1749	NAS 5-21754	3571
NAS 5-1348	3565	NAS 5-11265	2034	NAS 5-21756	2589
NAS 5-1810	2630	NAS 5-11276	2610	NAS 5-21771	1519
NAS 5-1925	3616	NAS 5-11279	2035	NAS 5-21773	1985
NAS 5-3838	2494	NAS 5-11303	1866	NAS 5-21774	3149
NAS 5-3931	1651	NAS 5-11309	2432	NAS 5-21775	1286
NAS 5-9074	2029	NAS 5-11310	2497	NAS 5-21777	1122
NAS 5-9075	3359	NAS 5-11361	3567	NAS 5-21778	1620
NAS 5-9096	1910	NAS 5-11362	2717	NAS 5-21781	2746
NAS 5-9097	1470	NAS 5-11363	1654	NAS 5-21784	1725
NAS 5-9098	1471	NAS 5-11376	2433	NAS 5-21785	1986
NAS 5-9112	3360	NAS 5-11380	2434	NAS 5-21791	2267
NAS 5-9274	2219	NAS 5-11387	1282	NAS 5-21792	2797
NAS 5-9275	2694	NAS 5-11405	1655	NAS 5-21793	2798
NAS 5-9276	2676	NAS 5-11406	3365	NAS 5-21794	3572
NAS 5-9305	2601	NAS 5-11407	3366	NAS 5-21795	1974

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GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.
NAS 5-21798	3573	NAS 5-23205	1289	NAS 8-26084	2574
NAS 5-21799	3601	NAS 5-23230	2439	NAS 8-26146	2830
NAS 5-21812	1123	NAS 5-23236	2749	NAS 8-26190	1012
NAS 5-21813	2394	NAS 5-23237	2148	NAS 8-26193	1013
NAS 5-21816	3446	NAS 5-23249	1250	NAS 8-26234	1629
NAS 5-21817	2530	NAS 5-23254	2631	NAS 8-26379	3245
NAS 5-21818	3602	NAS 5-23263	2612	NAS 8-26402	1474
NAS 5-21819	1124	NAS 5-23267	2440	NAS 8-26551	1630
NAS 5-21820	1125	NAS 5-23273	2500	NAS 8-26579	1014
NAS 5-21822	2049	NAS 6-1667	3213	NAS 8-26580	1015
NAS 5-21826	2587	NAS 6-1863	3498	NAS 8-26600	2994
NAS 5-21827	1379	NAS 6-1908	3413	NAS 8-26601	2919
NAS 5-21831	3012	NAS 6-1932	1096	NAS 8-26658	1830
NAS 5-21833	1093	NAS 6-1967	2050	NAS 8-26749	2534
NAS 5-21834	2413	NAS 6-2058	2441	NAS 8-26751	3246
NAS 5-21837	1726	NAS 6-2067	2198	NAS 8-26752	1016
NAS 5-21844	2747	NAS 8-1517	1075	NAS 8-26758	1585
NAS 5-21849	1126	NAS 8-1523	1788	NAS 8-26773	1045
NAS 5-21850	1881	NAS 8-2481	2269	NAS 8-26793	1046
NAS 5-21852	2037	NAS 8-2571	1076	NAS 8-26795	1047
NAS 5-21857	3244	NAS 8-5414	2545	NAS 8-26832	1790
NAS 5-21870	2597	NAS 8-11101	2632	NAS 8-26839	2273
NAS 5-21873	3156	NAS 8-11242	1828	NAS 8-26840	2274
NAS 5-21875	3157	NAS 8-11249	1077	NAS 8-26841	2720
NAS 5-21876	1074	NAS 8-11389	1829	NAS 8-26842	1531
NAS 5-21880	1987	NAS 8-11497	2532	NAS 8-26843	2575
NAS 5-21881	2531	NAS 8-20003	2090	NAS 8-26844	1183
NAS 5-21882	3158	NAS 8-20106	2918	NAS 8-26845	2501
NAS 5-21883	3412	NAS 8-20163	1009	NAS 8-26927	3096
NAS 5-21884	1287	NAS 8-20172	1078	NAS 8-26929	2444
NAS 5-21886	2748	NAS 8-20228	2442	NAS 8-26930	1017
NAS 5-21892	1731	NAS 8-20247	1789	NAS 8-26991	1048
NAS 5-21914	2437	NAS 8-20765	1010	NAS 8-27181	1049
NAS 5-21917	2268	NAS 8-21015	3574	NAS 8-27277	1676
NAS 5-22042	2719	NAS 8-21086	2443	NAS 8-27296	3159
NAS 5-22066	2123	NAS 8-21140	3067	NAS 8-27301	1091
NAS 5-22071	2130	NAS 8-21377	2533	NAS 8-27333	1291
NAS 5-22121	1127	NAS 8-21572	1129	NAS 8-27334	3068
NAS 5-22167	1094	NAS 8-23071	2633	NAS 8-27336	1050
NAS 5-22203	2686	NAS 8-24015	1988	NAS 8-27375	1831
NAS 5-22219	2687	NAS 8-24364	2270	NAS 8-27387	3160
NAS 5-23001	2688	NAS 8-24365	2271	NAS 8-27403	1184
NAS 5-23004	1705	NAS 8-24585	2272	NAS 8-27405	2721
NAS 5-23006	2438	NAS 8-24612	1036	NAS 8-27406	1292
NAS 5-23028	3603	NAS 8-24810	2485	NAS 8-27407	1914
NAS 5-23030	1380	NAS 8-24818	1011	NAS 8-27408	1382
NAS 5-23031	1381	NAS 8-24865	2784	NAS 8-27624	2275
NAS 5-23054	2590	NAS 8-24908	1037	NAS 8-27664	1018
NAS 5-23085	1095	NAS 8-24953	1038	NAS 8-27681	1832
NAS 5-23112	2038	NAS 8-25055	1039	NAS 8-27687	2634
NAS 5-23117	1288	NAS 8-25101	1040	NAS 8-27733	2276
NAS 5-23125	2591	NAS 8-25102	1041	NAS 8-27792	1051
NAS 5-23133	3066	NAS 8-25120	1042	NAS 8-27799	1587
NAS 5-23174	2089	NAS 8-25562	1079	NAS 8-27804	1130
NAS 5-23176	1128	NAS 8-25601	2016	NAS 8-27809	1052
NAS 5-23184	3367	NAS 8-25705	1290	NAS 8-27827	1019
NAS 5-23190	1675	NAS 8-25750	1043	NAS 8-27863	1131
NAS 5-23199	2220	NAS 8-26055	1044	NAS 8-27931	3323

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GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.	GRANT/ CONTRACT NUMBER	ACC NO.
NAS 8-27950	1867	NAS 8-28733	3575	NAS 9-1208	2039
NAS 8-27970	2722	NAS 8-28734	1693	NAS 9-4065	2286
NAS 8-27972	2277	NAS 8-28735	1836	NAS 9-5632	1293
NAS 8-27974	1532	NAS 8-28736	1062	NAS 9-5884	3214
NAS 8-27975	2278	NAS 8-28737	3034	NAS 9-5886	2149
NAS 8-27976	2576	NAS 8-28764	3181	NAS 9-5911	3215
NAS 8-27977	2502	NAS 8-28833	2535	NAS 9-5957	2725
NAS 8-27978	1185	NAS 8-28900	2215	NAS 9-5964	3368
NAS 8-28015	1533	NAS 8-28954	1063	NAS 9-6037	2726
NAS 8-28019	1080	NAS 8-28955	2101	NAS 9-6164	1604
NAS 8-28028	1186	NAS 8-28957	2105	NAS 9-6823	2287
NAS 8-28046	1187	NAS 8-29012	2091	NAS 9-7153	3354
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NGR 22-009-421	2343	NGR 23-004-089	2420	NGR 26-004-099	2562
NGR 22-009-473	2344	NGR 23-005-015	2453	NGR 26-004-100	2563
NGR 22-009-517	2345	NGR 23-005-094	2454	NGR 26-006-039	2550
NGR 22-009-526	2346	NGR 23-005-151	2455	NGR 26-008-001	2581
NGR 22-009-535	2347	NGR 23-005-185	2456	NGR 26-008-069	2582
NGR 22-009-540	2348	NGR 23-005-201	2457	NGR 27-001-040	2586
NGR 22-009-543	2349	NGR 23-005-320	2458	NGR 27-002-006	2588
NGR 22-009-551	2350	NGR 23-005-360	2459	NGR 28-004-021	2595
NGR 22-009-583	2351	NGR 23-005-417	2460	NGR 29-001-039	2596
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NGR 22-009-605	2353	NGR 23-005-463	2462	NGR 30-001-030	2605
NGR 22-009-618	2354	NGR 23-005-464	2463	NGR 30-001-040	2606
NGR 22-009-619	2355	NGR 23-005-470	2464	NGR 30-001-041	2607
NGR 22-009-625	2356	NGR 23-005-477	2465	NGR 30-002-052	2615
NGR 22-009-626	2357	NGR 23-005-487	2466	NGR 30-002-054	2616
NGR 22-009-627	2358	NGR 23-005-523	2467	NGR 30-002-074	2617
NGR 22-009-637	2359	NGR 23-005-528	2468	NGR 30-002-087	2618
NGR 22-009-646	2360	NGR 23-005-536	2469	NGR 30-002-088	2619
NGR 22-009-658	2361	NGR 23-005-537	2470	NGR 31-001-001	2647
NGR 22-009-672	2362	NGR 23-005-538	2471	NGR 31-001-074	2648
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NGR 22-009-694	2364	NGR 23-005-543	2473	NGR 31-001-151	2650
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NGR 22-009-726	2368	NGR 23-005-561	2477	NGR 31-001-197	2654
NGR 22-009-727	2369	NGR 23-005-563	2478	NGR 31-001-200	2655
NGR 22-009-731	2370	NGR 23-005-599	2479	NGR 31-001-202	2656
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NGR 31-001-241	2662	NGR 33-015-154	2863	NGR 36-004-069	2992
NGR 31-001-242	2663	NGR 33-015-160	2864	NGR 36-007-027	2953
NGR 31-001-263	2664	NGR 33-015-163	2865	NGR 36-008-004	2969
NGR 31-001-267	2665	NGR 33-015-166	2866	NGR 36-008-080	2970
NGR 31-001-272	2666	NGR 33-015-169	2867	NGR 36-008-144	2971
NGR 31-001-274	2667	NGR 33-016-102	2812	NGR 36-008-161	2972
NGR 31-001-276	2668	NGR 33-016-131	2813	NGR 36-008-163	2973
NGR 31-001-277	2669	NGR 33-016-167	2814	NGR 36-008-168	2974
NGR 31-001-307	2670	NGR 33-016-174	2815	NGR 36-008-169	2975
NGR 31-004-049	2678	NGR 33-016-177	2816	NGR 36-008-177	2976
NGR 32-003-037	2692	NGR 33-016-179	2817	NGR 36-008-193	2977
NGR 32-004-026	2703	NGR 33-016-181	2818	NGR 36-008-197	2978
NGR 32-004-062	2704	NGR 33-016-193	2819	NGR 36-009-017	2981
NGR 32-004-068	2705	NGR 33-016-197	2820	NGR 36-010-022	2996
NGR 33-006-047	2824	NGR 33-016-201	2821	NGR 36-010-024	2997
NGR 33-006-062	2825	NGR 33-018-148	2836	NGR 36-027-008	2936
NGR 33-006-068	2826	NGR 33-018-152	2837	NGR 36-027-021	2937
NGR 33-006-070	2827	NGR 33-018-183	2838	NGR 36-027-028	2938
NGR 33-008-102	2733	NGR 33-018-188	2839	NGR 36-027-035	2939
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NGR 33-008-168	2738	NGR 33-022-139	2875	NGR 36-027-051	2944
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NGR 33-008-177	2741	NGR 33-183-003	2847	NGR 36-028-004	2998
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NGR 33-010-127	2769	NGR 33-230-001	2801	NGR 37-008-002	3009
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NGR 33-010-145	2771	NGR 34-001-041	2888	NGR 38-002-013	3017
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NGR 33-015-139	2859	NGR 36-004-061	2988	NGR 39-009-077	3080
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NGR 39-009-180	3084	NGR 44-001-081	3264	NGR 44-012-255	3350
NGR 39-009-183	3085	NGR 44-001-095	3265	NGR 44-015-003	3409
NGR 39-009-184	3086	NGR 44-001-106	3266	NGR 44-017-004	3282
NGR 39-009-186	3087	NGR 44-001-117	3267	NGR 44-029-003	3205
NGR 39-009-204	3088	NGR 44-001-125	3268	NGR 44-033-002	3207
NGR 39-009-210	3089	NGR 44-001-149	3269	NGR 44-033-014	3208
NGR 39-009-218	3090	NGR 44-001-152	3270	NGR 44-033-015	3209
NGR 39-009-256	3091	NGR 44-003-044	3199	NGR 44-033-016	3210
NGR 39-009-270	3092	NGR 44-003-053	3200	NGR 44-073-003	3240
NGR 39-010-114	3102	NGR 44-003-054	3201	NGR 44-081-001	3204
NGR 39-010-123	3103	NGR 44-003-057	3202	NGR 44-084-002	3408
NGR 39-011-113	3110	NGR 44-004-030	3376	NGR 44-088-002	3393
NGR 39-011-129	3111	NGR 44-004-116	3377	NGR 44-090-001	3387
NGR 39-011-137	3112	NGR 44-004-117	3378	NGR 44-094-001	3397
NGR 39-011-138	3113	NGR 44-004-120	3379	NGR 44-094-003	3398
NGR 39-011-146	3114	NGR 44-004-121	3380	NGR 44-095-001	3203
NGR 39-011-150	3115	NGR 44-004-124	3381	NGR 45-001-011	3410
NGR 39-011-156	3116	NGR 44-004-133	3382	NGR 45-001-032	3411
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NGR 39-087-026	3039	NGR 44-005-137	3316	NGR 47-002-041	3493
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NGR 40-002-123	3130	NGR 44-006-156	3228	NGR 47-003-077	3460
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NGR 41-001-031	3138	NGR 44-007-049	3237	NGR 47-004-076	3505
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NGR 41-002-026	3144	NGR 44-009-025	3271	NGR 47-004-089	3507
NGR 41-002-034	3145	NGR 44-009-030	3272	NGR 47-004-090	3508
NGR 41-006-001	3140	NGR 44-011-050	3278	NGR 47-004-091	3509
NGR 42-001-006	3148	NGR 44-012-003	3395	NGR 47-004-093	3510
NGR 43-001-023	3170	NGR 44-012-147	3388	NGR 47-004-097	3511
NGR 43-001-102	3171	NGR 44-012-151	3396	NGR 47-004-098	3512
NGR 43-001-114	3172	NGR 44-012-152	3339	NGR 47-004-100	3513
NGR 43-001-115	3173	NGR 44-012-165	3340	NGR 47-004-101	3514
NGR 43-001-116	3174	NGR 44-012-194	3341	NGR 47-004-102	3515
NGR 43-001-124	3175	NGR 44-012-202	3342	NGR 47-004-103	3516
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NGR 47-005-145	3478	NGR 50-008-001	3561	NGT 21-001-004	2142
NGR 47-005-153	3479	NGR 51-001-028	3606	NGT 21-002-254	2197
NGR 47-005-172	3480	NGR 51-001-033	3607	NGT 21-025-006	2144
NGR 47-005-176	3481	NGR 51-001-035	3608	NGT 21-027-009	2127
NGR 47-005-179	3482	NGR 51-001-036	3609	NGT 22-003-001	2207
NGR 47-005-181	3483	NGR 51-001-045	3610	NGT 22-007-008	2244
NGR 47-005-186	3484	NGR 52-001-001	3624	NGT 22-011-003	2388
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NGR 47-005-208	3486	NGR 52-028-004	3628	NGT 23-005-018	2481
NGR 47-006-010	3434	NGR 52-083-003	3612	NGT 23-006-001	2488
NGR 47-006-050	3435	NGR 52-133-001	3613	NGT 24-005-012	2524
NGR 47-006-054	3436	NGR 52-140-002	3618	NGT 24-005-078	2525
NGR 47-006-064	3437	NGR 52-155-002	3625	NGT 25-001-002	2543
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NGR 48-002-125	3541	NGT 05-009-008	1568	NGT 33-022-005	2877
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NGR 50-002-191	3595	NGT 16-001-004	2046	NGT 48-002-007	3553
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NSR 12-001-019	1880
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APPENDIX B

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The Fields used here are specified by Amendment J, "Standard Classification of Fields of Science and Engineering," to Office of Management and Budget (OMB) Circular A-46, "Standards for Statistical Surveys." Field codes are interpreted as follows:

<u>PHYSICAL SCIENCES</u>	<u>ENVIRONMENTAL SCIENCES</u> (Terrestrial and extraterrestrial)	<u>LIFE SCIENCES</u>	<u>SOCIAL SCIENCES</u>
11 ASTRONOMY	31 ATMOSPHERIC SCIENCES	51 BIOLOGY	71 ANTHROPOLOGY
12 CHEMISTRY	32 GEOLOGICAL SCIENCES	52 CLINICAL MEDICAL	72 ECONOMICS
13 PHYSICS	33 OCEANOGRAPHY	53 OTHER MEDICAL	73 HISTORY
19 PHYSICAL SCIENCES, NEC*	39 ENVIRONMENTAL SCIENCES, NEC*	59 LIFE SCIENCES, NEC*	74 LINGUISTICS
	<u>ENGINEERING</u>		75 POLITICAL SCIENCE
	41 AERONAUTICAL		76 SOCIOLOGY
	41 ASTRONAUTICAL		79 SOCIAL SCIENCE, NEC*
	43 CHEMICAL		
	44 CIVIL	<u>PSYCHOLOGICAL</u>	<u>OTHER SCIENCES**</u>
<u>MATHEMATICS</u>	45 ELECTRICAL	61 BIOLOGICAL	99 ALL DISCIPLINE(S)
21 ANY DISCIPLINE(S)	46 MECHANICAL	62 SOCIAL ASPECTS	
	47 METALLURGY AND MATERIALS	69 PSYCHOLOGICAL, NEC*	
	49 ENGINEERING, NEC*		

*Not Elsewhere Classified (For interdisciplinary projects and others not listed by discipline name)

**For interdisciplinary projects which cannot be classified within any of the preceding main fields

Abbreviations used in the "Technical Officer Locations" column are discussed in the prefatory pages.

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	ACC NO.
	AUBURN UNIV-AUBURN	Naumann, R. J.	MSFC	Harwell, K. E.	NAS 8-26190	1012
	BOWIE STATE COLLEGE	McDonald, F. B.	GSFC	Thornabene, H. S.	NGR 21-027-001	2124
	BRIGHAM YOUNG UNIV	Brunk, W. E.	HQ-SL	Jones, D. E.	NGR 45-001-032	3411
	CALIF INST OF TECH	Cameron, R. M.	ARC	Werner, M. W.	NGR 05-002-281	1229
	CALIF INST OF TECH	Da Silva, A. J.	JSC	Zirin, H.	NAS 9-12840	1193
	CALIF INST OF TECH	Kenimer	LARC	Nicolett, M. A.	NGL 05-002-100	1200
	CALIF INST OF TECH	Dabbs, J. R.	MSFC	Stone, E. C.	NAS 8-26844	1183
	CALIF INST OF TECH	Talley, D.	MSFC	Garmire, G. P.	NAS 8-27403	1184
	CALIF INST OF TECH	Krome, H. O.	MSFC	Stone, E. C.	NAS 8-27978	1185
	CALIF INST OF TECH	Reichman, E. J.	MSFC	Zirin, H.	NAS 8-28028	1186
	CALIF INST OF TECH	Potter, R. A.	MSFC	Garmire, G.	NAS 8-28573	1188
	CALIF INST OF TECH	Roman, N. G.	HQ-SG	Neugebauer, G.	NGL 05-002-007	1197
	CALIF INST OF TECH	Weldon, J. M.	HQ-SG	Zirin, H.	NGL 05-002-034	1198
	CALIF INST OF TECH	Roman, N. G.	HQ-SG	Oke, J. B.	NGL 05-002-134	1202
	CALIF INST OF TECH	Boggess, N. W.	HQ-SG	Neugebauer, G.	NGL 05-002-207	1208
	CALIF INST OF TECH	Weldon, J. M.	HQ-SG	Leighton, R. B.	NGR 05-002-142	1214
	CALIF INST OF TECH	Opp, A. G.	HQ-SG	Vogt, R. E.	NGR 05-002-160	1218
	CALIF INST OF TECH	Roman, N. G.	HQ-SG	Garmire, G. P.	NGR 05-002-219	1221
	CALIF INST OF TECH	Kelsall, T.	HQ-SG	Thorne, K. S.	NGR 05-002-256	1227
	CALIF INST OF TECH	Roman, N. G.	HQ-SG	Garmire, G. P.	NGR 05-002-284	1230
	CALIF INST OF TECH	Calahan, H. D.	HQ-SG	Zirin, H.	NGR 05-002-294	1231
	CALIF INST OF TECH	Chase, R. H.	HQ-SG	Zirin, H.	NSR 05-002-071	1238
	CALIF INST OF TECH	Brunk, W. E.	HQ-SL	Muhleman, D. O.	NGL 05-002-003	1195
	CALIF INST OF TECH	Brunk, W. E.	HQ-SL	Munch, G.	NGL 05-002-140	1204
	CALIF INST OF TECH	Brunk, W. E.	HQ-SL	Muhleman, D. O.	NGR 05-002-114	1211
	CALIF INST OF TECH	Brunk, W. E.	HQ-SL	Westphal, J. A.	NGR 05-002-185	1220
	CAL STATE U-CHICO	Boese, R. W.	ARC	Regas, J. L.	NGL 05-076-001	1240
	CAL STATE U-FULLERTN	Dubin, M.	HQ-SG	Johnson, F. M.	NGR 05-071-002	1241
	CASE WESTERN RESERVE	Wdowial, T. A.	MSFC	Bidelman, W.	NAS 8-29707	2928
	CITY COLLEGE OF N Y	Stothers, R. B.	GSFC	Lea, R. M.	NGL 33-013-040	2713

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APPENDIX B CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	AC NC
11	COLUMBIA UNIVERSITY	Donley, J. L.	GSFC	Novick, R.	NAS 5-11362	271
11	COLUMBIA UNIVERSITY	Potter, R. A.	MSFC	Novick, R.	NAS 8-26841	272
11	COLUMBIA UNIVERSITY	Neuschaefter, R. W.	MSFC	Angel, J. R.	NAS 8-27405	272
11	COLUMBIA UNIVERSITY	Lavender, R. E.	MSFC	Novick, R.	NAS 8-27970	272
11	COLUMBIA UNIVERSITY	Neuschafer, R. W.	MSFC	Novick, R.	NAS 8-29702	272
11	COLUMBIA UNIVERSITY	Roman, N. G.	HQ-SG	Novick, R.	NGR 33-008-102	273
11	COLUMBIA UNIVERSITY	Oertel, G. K.	HQ-SG	Novick, R.	NGR 33-008-125	273
11	COLUMBIA UNIVERSITY	Bogges, N. W.	HQ-SG	Novick, R.	NGR 33-008-158	273
11	CORNELL UNIVERSITY	Cameron, R. M.	ARC	Houck, J. R.	NGR 33-010-081	276
11	CORNELL UNIVERSITY	Cameron, R. M.	ARC	Harwit, M. O.	NGR 33-010-146	276
11	CORNELL UNIVERSITY	Mason, R. H.	ARC	Houck, J. R.	NGR 33-010-182	276
11	CORNELL UNIVERSITY	Opp, A. G.	HQ-SG	Greisen, K. I.	NGR 33-010-145	276
11	DUDLEY OBSERVATORY	Hall, C. F.	ARC	Weinberg, J. L.	NAS 2-5610	276
11	DUDLEY OBSERVATORY	Hall, C. F.	ARC	Weinberg, J. L.	NAS 2-6560	276
11	DUDLEY OBSERVATORY	Hardee, S. N.	JSC	Mercer, R. D.	NAS 9-12557	276
11	DUDLEY OBSERVATORY	Chisolm, W. L., Jr.	MSFC	Weinberg, J. L.	NAS 8-24865	276
11	DUDLEY OBSERVATORY	Dubin, M.	HQ-SG	Hemenway, C. L.	NGL 33-011-001	276
11	DUDLEY OBSERVATORY	Dubin, M.	HQ-SG	Weinberg, J. L.	NGR 33-011-017	276
11	DUDLEY OBSERVATORY	Dubin, M.	HQ-SG	Greenberg, J. M.	NGR 33-011-043	276
11	DUDLEY OBSERVATORY	Esenwein, G. F.	HQ-SM	Mercer, R.	NGR 33-011-031	276
11	FEDERAL CITY COLLEGE	McDonald, F. B.	GSFC	Whiteside, H.	NGR 09-050-001	17-
11	FEDERAL CITY COLLEGE	Pohly, J. G.	HQ-PY	McDowell, H.	NGR 09-050-010	17-
11	FLORIDA STATE UNIV	Brunk, W. E.	HQ-SL	Hunt, R. H.	NGR 10-004-056	17-
11	HARVARD UNIVERSITY	Weldon, J. W.	HQ-SG	Goldberg, L.	NGL 22-007-006	22-
11	HARVARD UNIVERSITY	Weldon, J. M.	HQ-SG	Dalgarno, O.	NGL 22-007-136	22-
11	HARVARD UNIVERSITY	Weldon, J. M.	HQ-SG	Goldberg, L.	NGR 22-007-202	22-
11	HARVARD UNIVERSITY	Oertel, G. K.	HQ-SG	Goldberg, L.	NGR 22-007-211	22
11	HAVERFORD COLLEGE	Bogges, N. W.	HQ-SG	Greene, L. C.	NGL 39-006-001	30
11	HOUSTON BAPTIST COL	Bonner, G.	JSC	Modisette, J. L.	NGR 44-081-001	32
11	HOWARD UNIVERSITY	Jackson, W. M.	GSFC	Kumar, C. K.	NGR 09-011-052	17
11	INDIANA U-BLOOMINGTN	Roman, N. G.	HQ-SG	Johnson, H. R.	NGL 15-003-002	19
11	JOHNS HOPKINS UNIV	Baughner, C. R.	MSFC	Gotwols, B. L.	NGR 21-001-024	21
11	JOHNS HOPKINS UNIV	Bogges, N. W.	HQ-SG	Crosswhite, H. M.	NGR 21-001-084	21
11	LA STATE U-BAT ROUGE	Browning, R. K.	GSFC	Huggett, R. W.	NAS 5-11426	20
11	LA STATE U-BAT ROUGE	Browning, R. K.	GSFC	Huggett, R. W.	NAS 5-23174	20
11	LA STATE U-BAT ROUGE	Opp, A. G.	HQ-SG	Huggett, R. W.	NGR 19-001-012	20
11	LA STATE U-SHREVEPT	Giuli, R. T.	JSC	Moss, T. A.	NAS 9-9317	21
11	MASS INST OF TECH	Cameron, R. M.	ARC	Mc Lord, T. B.	NGR 22-009-718	23
11	MASS INST OF TECH	Kull, F. J.	GSFC	Marshall, R. E.	NAS 5-11002	22
11	MASS INST OF TECH	Wrublik, D. P.	GSFC	Clark, G. W.	NAS 5-11450	22
11	MASS INST OF TECH	Giuli, R. T.	JSC	Weiss, R.	NAS 9-8328	22
11	MASS INST OF TECH	Potter, R. A.	MSFC	Bradt, H.	NAS 8-26839	22
11	MASS INST OF TECH	Power, J. A.	MSFC	Lewin, W. H.	NAS 8-26840	22
11	MASS INST OF TECH	Bodie, W. G.	MSFC	Bradt, H. V.	NAS 8-27972	22
11	MASS INST OF TECH	Jordan, W.	MSFC	Lewin, W. H.	NAS 8-27975	22
11	MASS INST OF TECH	Bogges, N. W.	HQ-SG	Weiss, R.	NGR 22-009-526	22
11	MASS INST OF TECH	Dubin, M.	HQ-SG	McCord, T. B.	NGR 22-009-583	22
11	MASS INST OF TECH		HQ-SG	Kraushaar, W.	NSR 22-009-073	22
11	MASS INST OF TECH	Bogges, N. W.	HQ-SG	Clark, G. W.	NSR 22-009-654	22
11	MASS INST OF TECH	Brunk, W. E.	HQ-SL	McCord, T. B.	NGR 22-009-473	22
11	MASS INST OF TECH	Brunk, W. E.	HQ-SL	Pettengill, G. H.	NGR 22-009-672	22
11	MASS INST OF TECH	Bryson, R. P.	HQ-SM	Press, F.	NGL 22-009-187	22
11	MONTANA STATE UNIV	Roman, N. G.	HQ-SG	Nordivedt, K., Jr.	NGR 27-001-040	22
11	NEW MEX ST U-LAS CR	Oosterhout, J. D.	GSFC	Chavez, R.	NAS 5-21433	26
11	NEW MEX ST U-LAS CR	Roman, N. G.	HQ-SG	Liefeld, R. J.	NGL 32-003-069	26
11	NEW MEX ST U-LAS CR	Brunk, W. E.	HQ-SL	Smith, B. A.	NGL 32-003-001	26
11	NEW YORK INST TECH	Weldon, J. M.	HQ-SG	Stroke, G. W.	NGR 33-230-002	26
11	NO CAROLINA STATE U	Dubin, M.	HQ-SG	Manning, E. R.	NGL 34-002-042	26

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	ACC NO.
11	NORTHEASTERN UNIV		GSFC	Kaula, W. M.	NSG 310	2389
11	NORTHWESTERN UNIV	Stone, R. G.	GSFC	Mintzer, D.	NGR 14-007-071	1898
11	NORTHWESTERN UNIV	Mansur, S. R.	JSC	Ray, J. W.	NAS 9-7222	1889
11	NORTHWESTERN UNIV	Henize, K. G.	JSC	Hynek, J. A.	NAS 9-12280	1890
11	NORTHWESTERN UNIV	Kondo, Y.	JSC	Hynek, J. A.	NGR 14-007-048	1896
11	NORTHWESTERN UNIV		HQ-MT	Henize, K. G.	NGR 14-007-069	1897
11	NORTHWESTERN UNIV	Boggess, N. W.	HQ-SG	Huang, S. S.	NGL 14-007-041	1892
11	NORTHWESTERN UNIV	Roman, N. G.	HQ-SG	Bahng, J. D.	NGR 14-007-122	1901
11	NORTHWESTERN UNIV		HQ-SG	Henize, K. G.	NSR 14-007-050	1905
11	OREGON STATE UNIV	High, R. W.	JSC	Schmitt, R. A.	NGL 38-002-032	3014
11	POLY INST BROOKLYN	Rasool, S. I.	GSFC	Gross, S. H.	NGR 33-006-062	2825
11	PRINCETON UNIVERSITY	Kupperian, J. E.	GSFC	Spitzer, L., Jr.	NAS 5-1810	2630
11	PRINCETON UNIVERSITY	Boggess, A., III	GSFC	Lowrance, J.	NSR 31-001-286	2674
11	PRINCETON UNIVERSITY	Reichmann, E.	MSFC	Morton, D. C.	NAS 8-23071	2633
11	PRINCETON UNIVERSITY	Bordelon, C. S.	MSFC	Danielson, R. E.	NAS 8-27687	2634
11	PRINCETON UNIVERSITY	Hamilton, E. C.	MSFC	Lowrance, J. L.	NGR 31-001-276	2668
11	PRINCETON UNIVERSITY	Boggess, N. W.	HQ-SG	Spitzer, L., Jr.	NGL 31-001-007	2639
11	PRINCETON UNIVERSITY	Roman, N. G.	HQ-SG	Danielson, R. E.	NGR 31-001-001	2647
11	PRINCETON UNIVERSITY	Sures, A. H.	HQ-SG	Danielson, R. E.	NGR 31-001-142	2649
11	PRINCETON UNIVERSITY	Sures, A. H.	HQ-SG	Spitzer, L., Jr.	NGR 31-001-236	2661
11	PRINCETON UNIVERSITY	Roman, N. G.	HQ-SG	Spitzer, L.	NSR 31-001-127	2672
11	PRINCETON UNIVERSITY	Sures, A. H.	HQ-SG	Morton, D. C.	NSR 31-001-259	2673
11	PRINCETON UNIVERSITY	Roman, N. G.	HQ-SG	Lowrance, J. L.	NSR 31-001-901	2675
11	PRINCETON UNIVERSITY	Brunk, W. E.	HQ-SL	Smith, W. H.	NGR 31-001-242	2663
11	PURDUE UNIVERSITY	Roman, N. G.	HQ-SG	Andrew, K. L.	NGL 15-005-003	1992
11	RENSSELAER POLY-NY	Dubin, M.	HQ-SG	Hudson, J. B.	NGL 33-018-017	2834
11	RICE UNIVERSITY	Gray, J. W.	WS	Freeman, J. W.	NAS 6-1667	3213
11	RUTGERS U-N BRUNSWK	Thole, J. M.	GSFC	Rouy, A. L.	NAS 5-9276	2676
11	RUTGERS UNIV-NEWARK	Dubin, M.	HQ-SG	Carroll, B.	NGR 31-004-049	2678
11	SO UNIV-BATON ROUGE	Pohly, J. G.	HQ-PY	Chakkalakal, D. A.	NGR 19-005-006	2108
11	STANFORD UNIVERSITY	Stone, R. G.	GSFC	Peterson, A. M.	NAS 5-11387	1282
11	STANFORD UNIVERSITY	Wrublik, K. P.	GSFC	Hofstadter, R.	NAS 5-23117	1288
11	STANFORD UNIVERSITY	Decher, R.	MSFC	Everitt, C.	NAS 8-25705	1290
11	STANFORD UNIVERSITY	Power, J. A.	MSFC	Hofstadter, R.	NAS 8-27406	1292
11	STANFORD UNIVERSITY	Weldon, J. M.	HQ-SG	Sturrock, P. A.	NGL 05-020-272	1312
11	STANFORD UNIVERSITY	Ott, E. J.	HQ-SG	Spicer, W. E.	NGR 05-020-066	1324
11	STANFORD UNIVERSITY	Opp, A. G.	HQ-SG	Hofstadter, R.	NGR 05-020-452	1333
11	STANFORD UNIVERSITY	Boggess, N. W.	HQ-SG	Petrosian, V.	NGR 05-020-510	1336
11	STANFORD UNIVERSITY	Weldon, J. M.	HQ-SG	Sturrock, P.	NGR 05-020-512	1337
11	STANFORD UNIVERSITY	Weldon, J. M.	HQ-SG	Wilcox, J.	NGR 05-020-559	1345
11	STANFORD UNIVERSITY	Brunk, W. E.	HQ-SL	Bracewell, R. N.	NGR 05-020-644	1358
11	STATE U NY-STONY BRK	Mason, R. H.	ARC	Gebel, W.	NGR 33-015-140	2860
11	STATE U NY-STONY BRK	Cameron, R. M.	ARC	Gebel, W.	NGR 33-015-166	2866
11	STATE U NY-STONY BRK	Stothers, R.	GSFC	Owen, T.	NGL 33-015-082	2854
11	STATE U NY-STONY BRK		HQ-PY	Kao, Y. H.	NGL 33-015-036	2852
11	STATE U NY-STONY BRK	Brunk, W. E.	HQ-SL	Owen, T.	NGR 33-015-141	2861
11	STATE U NY-STONY BRK	Mitz, M. A.	HQ-SL	Owen, T.	NGR 33-015-149	2862
11	ST U NY COL-GENESCO	Kelsall, T.	HQ-SG	Meisel, D. D.	NGR 33-219-002	2870
11	TEMPLE UNIVERSITY	Dubin, M.	HQ-SG	Bohn, J. L.	NGR 39-012-001	3097
11	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Guenther, G. A.	NAS 8-24908	1037
11	UNIV ALA-HUNTSVILLE	Hagyard, M.	MSFC	Wu, S. T.	NAS 8-28097	1054
11	UNIV ALASKA-FAIRBANKS	Konradi, A.	JSC		NAS 9-12649	1099
11	UNIV OF ARIZONA	Hall, C. F.	ARC	Gehrels, T.	NAS 2-6265	1114
11	UNIV OF ARIZONA	Hall, C. F.	ARC	Baker, L. R.	NAS 2-7476	1116
11	UNIV OF ARIZONA	Cameron, R. M.	ARC	Kuiper, G. P.	NGR 03-002-258	1158
11	UNIV OF ARIZONA	Cameron, R. M.	ARC	Johnson, H. L.	NGR 03-002-331	1165
11	UNIV OF ARIZONA	Cameron, R. M.	ARC	Larson, H. P.	NGR 03-002-332	1166
11	UNIV OF ARIZONA	Cameron, R. M.	ARC	Johnson, H. L.	NGR 03-002-333	1167

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	AC NC
11	UNIV OF ARIZONA	Cameron, R. M.	ARC	Larson, H. P.	NGR 03-002-334	116
11	UNIV OF ARIZONA	Cameron, R. M.	ARC	Johnson, H. L.	NGR 03-002-354	116
11	UNIV OF ARIZONA	Browning, R. K.	GSFC	Bowen, T.	NAS 5-11425	111
11	UNIV OF ARIZONA	Chin, E. S.	GSFC	Marathy, A. S.	NAS 5-11456	111
11	UNIV OF ARIZONA	Bogges, N. W.	GSFC	Kuiper, G. P.	NAS 5-21484	112
11	UNIV OF ARIZONA	Stecher, T. P.	GSFC	Kuiper, G. P.	NAS 5-22121	112
11	UNIV OF ARIZONA	Browning, R. K.	GSFC	Bowen, T.	NAS 5-23176	112
11	UNIV OF ARIZONA	Hoffman, W. F.	GSFC	Lec, T. A.	NGR 03-002-180	112
11	UNIV OF ARIZONA	Draper, L. T.	GSFC	Johnston, H. L.	NGR 03-002-184	112
11	UNIV OF ARIZONA	Alkins, H. L.	MSFC	Simmons, M. J.	NAS 8-21572	112
11	UNIV OF ARIZONA	Roman, N. G.	HQ-SG	Bickel, W.	NGL 03-002-017	112
11	UNIV OF ARIZONA	Dubin, M.	HQ-SG	Gehrels, A. M.	NGL 03-002-081	112
11	UNIV OF ARIZONA	Opp, A. G.	HQ-SG	Bowen, T.	NGR 03-002-071	112
11	UNIV OF ARIZONA	Ashworth, C. D.	HQ-SG	Gehrels, A. M.	NGR 03-002-193	112
11	UNIV OF ARIZONA	Roman, N. G.	HQ-SG	Low, F. J.	NGR 03-002-269	112
11	UNIV OF ARIZONA	Bogges, N. W.	HQ-SG	Low, F. J.	NGR 03-002-277	112
11	UNIV OF ARIZONA	Sobieski, S.	HQ-SG	Weymann, R. J.	NGR 03-002-309	112
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Kuiper, G. P.	NGL 03-002-002	112
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Roemer, E.	NGL 03-002-122	112
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Gehrels, A. M.	NGR 03-002-219	112
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Johnson, H. L.	NGR 03-002-236	112
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Kuiper, G. P.	NGR 03-002-270	112
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Johnson, H. L.	NGR 03-002-274	112
11	UNIV OF ARIZONA	Mitz, M. A.	HQ-SL	Gehrels, A. M.	NGR 03-002-275	112
11	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Low, F. J.	NGR 03-002-356	112
11	UNIV OF ARIZONA	Bryson, R. B.	HQ-SM	Tift, W. G.	NGR 03-002-153	112
11	UNIV CALIF-BERKELEY	Cameron, R. M.	ARC	Townes, C. H.	NGR 05-003-432	14
11	UNIV CALIF-BERKELEY	Cameron, R. M.	ARC	Townes, C. H.	NGR 05-003-511	14
11	UNIV CALIF-BERKELEY	Thole, J. M.	GSFC	Boyer, C. S.	NAS 5-23031	13
11	UNIV CALIF-BERKELEY	Robbins, D. E.	JSC	Bowyer, C. S.	NAS 9-11024	13
11	UNIV CALIF-BERKELEY	Dabbs, J. R.	MSFC	Alvarez, L.	NAS 8-27408	13
11	UNIV CALIF-BERKELEY	Opp, A. G.	HQ-SG	Price, P. B.	NGR 05-003-376	14
11	UNIV CALIF-BERKELEY	Bogges, N. W.	HQ-SG	Townes, C. H.	NGR 05-003-402	14
11	UNIV CALIF-BERKELEY	Bogges, N. W.	HQ-SG	Bowyer, C. S.	NGR 05-003-450	14
11	UNIV CALIF-BERKELEY	Kelsall, T.	HQ-SG	Silk, J. I.	NGR 05-003-453	14
11	UNIV CALIF-BERKELEY	Weldon, J. M.	HQ-SG	Phillips, J. G.	NGR 05-003-499	14
11	UNIV CALIF-BERKELEY	Oertel, G. K.	HQ-SG	Anderson, K. A.	NGR 05-003-510	14
11	UNIV CALIF-BERKELEY	Opp, A. G.	HQ-SG	Alvarez, L. W.	NGR 05-003-553	14
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-SL	Townes, C. H.	NGR 05-003-452	14
11	UNIV CALIF-BERKELEY	Brunk, W. E.	HQ-SL	Field, G. B.	NGR 05-003-459	14
11	UNIV CALIF-L ANGELES	Lafferty, P. E.	JSC	Coleman, P. J., Jr.	NAS 9-12236	14
11	UNIV CALIF-L ANGELES	Oertel, G. K.	HQ-SG	Alley, L. H.	NGL 05-007-046	14
11	UNIV CALIF-RIVERSIDE	Opp, A. G.	HQ-SG	White, R. S.	NGR 05-008-022	14
11	UNIV CALIF-SAN DIEGO	Thole, J. M.	GSFC	Peterson, L. E.	NAS 5-11080	14
11	UNIV CALIF-SAN DIEGO	Thole, J. M.	GSFC	Peterson, L. E.	NAS 5-11081	14
11	UNIV CALIF-SAN DIEGO	Power, J. A.	MSFC	Peterson, L. E.	NAS 8-26842	14
11	UNIV CALIF-SAN DIEGO	Jordan, W. E.	MSFC	Peterson, L. A.	NAS 8-27974	14
11	UNIV CALIF-SAN DIEGO	Fountain, W. F.	MSFC	Hudson, H. S.	NAS 8-28015	14
11	UNIV CALIF-SAN DIEGO	Opp, A. G.	HQ-SG	Peterson, L. E.	NGL 05-005-003	14
11	UNIV CALIF-SAN DIEGO	Roman, N. G.	HQ-SG	Burbidge, G. R.	NGL 05-005-004	14
11	UNIV CALIF-SAN DIEGO	Bogges, N. W.	HQ-SG	Gillet, F. C.	NGL 05-009-230	14
11	UNIV CALIF-SAN DIEGO	Dubin, M.	HQ-SG	Allven, H.	NGR 05-009-110	14
11	UNIV CALIF-SAN DIEGO	Aucermanne, M. J.	HQ-SG	McIlwain, C. E.	NGR 05-009-188	14
11	UNIV CALIF-SAN DIEGO	Brunk, W. E.	HQ-SL	Gillet, F. C.	NGR 05-009-142	14
11	UNIV CALIF-S CRUZ	Ott, E. J.	HQ-SG	Wampler, E. J.	NGR 05-061-006	14
11	UNIV CALIF-S CRUZ	Roman, N. G.	HQ-SG	Wampler, E. J.	NGR 05-061-014	14
11	UNIV CALIF-S CRUZ	Bogges, N. W.	HQ-SG	Rank, D. M.	NGR 05-061-015	14
11	UNIV OF CHICAGO	Mason, R. H.	ARC	Harper, D. A.	NGR 14-001-211	14

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ELD NO	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	ACC NO.
11	UNIV OF CHICAGO	Cameron, R. M.	ARC	Harper, D. A.	NGR 14-001-227	1945
11	UNIV OF CHICAGO	Parker, R. A.	JSC	O'Dell, C. R.	NAS 9-11691	1916
11	UNIV OF CHICAGO	Dabbs, J. R.	MSFC	Meyer, P.	NAS 8-27407	1914
11	UNIV OF CHICAGO	Opp, A. G.	HQ-SG	Parker, E. N.	NGL 14-001-001	1917
11	UNIV OF CHICAGO	Opp, A. G.	HQ-SG	Meyer, P.	NGL 14-001-005	1918
11	UNIV OF CHICAGO	Opp, A. G.	HQ-SG	Simpson, J. A.	NGL 14-001-006	1919
11	UNIV OF CHICAGO	Dubin, M.	HQ-SG	O'Dell, C. R.	NGL 14-001-060	1923
11	UNIV OF CHICAGO	Kelsall, T.	HQ-SG	Hobbs, L. M.	NGR 14-001-147	1930
11	UNIV OF CHICAGO	Weldon, J. M.	HQ-SG	Blake, R. L.	NGR 14-001-164	1932
11	UNIV OF CHICAGO	Bogges, N. W.	HQ-SG	Odell, C. R.	NGR 14-001-190	1936
11	UNIV OF CINCINNATI	Brooks, D. R.	LARC	Herget, P.	NAS 1-11105	2983
11	UNIV COLORADO-BOLDR		ARC		NAS 2-1298	1650
11	UNIV COLORADO-BOLDR	Weldon, J. M.	HQ-SG	Smith, S. J.	NGL 06-003-057	1657
11	UNIV COLORADO-BOLDR	Weldon, J. M.	HQ-SG	Rense, W. A.	NGR 06-003-069	1660
11	UNIV COLORADO-BOLDR	Roman, N. G.	HQ-SG	Lillie, C. F.	NGR 06-003-176	1664
11	UNIV COLORADO-BOLDR	Roman, N. G.	HQ-SG	Lillie, C. F.	NGR 06-003-179	1666
11	UNIV COLORADO-BOLDR		HQ-SG		NGR 06-003-185	1669
11	UNIV OF DENVER	Brunk, W. E.	HQ-SL	Murcray, D. G.	NGR 06-004-114	1685
11	UNIV OF FLORIDA	Kondo, Y.	JSC		NAS 9-11436	1791
11	UNIV OF FLORIDA	Hallenbeck, D. R.	HQ-SG	Carr, T. D.	NGR 10-005-176	1805
11	UNIV OF HAWAII	Brandt, J. C.	GSFC	Wolstencroft, R. D.	NAS 5-11303	1866
11	UNIV OF HAWAII	McGuire, J. P.	MSFC		NAS 8-27950	1867
11	UNIV OF HAWAII	Weldon, J. M.	HQ-SG	Jefferies, J. T.	NGL 12-001-011	1870
11	UNIV OF HAWAII	Weldon, J. M.	HQ-SG	Jefferies, J. T.	NGR 12-001-075	1874
11	UNIV OF HAWAII	Roman, N. G.	HQ-SG	Jefferies, J. T.	NGR 12-001-111	1878
11	UNIV OF HAWAII	Brunk, W. E.	HQ-SL	Jefferies, J. T.	NGL 12-001-057	1873
11	UNIV OF HAWAII	Brunk, W. E.	HQ-SL	Sinton, W. M.	NGR 12-001-083	1875
11	UNIV OF HAWAII	Brunk, W. E.	HQ-SL	Sinton, W. M.	NGR 12-001-097	1876
11	UNIV OF HAWAII	Brunk, W. E.	HQ-SL	Jefferies, J. T.	NSR 12-001-019	1880
11	UNIV OF HAWAII	Strickland, A. T.	HQ-SM	Jefferies, J. T.	NASW 2326	1868
11	UNIV OF HAWAII	Strickland, A. T.	HQ-SM	Jefferies, J. T.	NGF 12-001-102	1869
11	UNIV OF HOUSTON	Robbins, D. E.	JSC	Goodman, C.	NGL 44-005-041	3306
11	UNIV OF HOUSTON	Cour Palais, B.	JSC	Eisner, M.	NGR 44-005-181	3318
11	UNIV ILLINOIS-URBANA	Brunk, W. E.	HQ-SL	Dichel, J. R.	NGR 14-005-176	1963
11	UNIV OF IOWA	Ousley, G. W.	GSFC	Gurnett, D. A.	NAS 5-11279	2035
11	UNIV OF IOWA	Bowker, D. E.	LARC	Van Allen, J. A.	NAS 1-8141	2024
11	UNIV OF IOWA	Brunk, W. E.	HQ-SL	Neff, J. A.	NGR 16-001-094	2044
11	UNIV OF IOWA	Brunk, W. E.	HQ-SL	Neff, J. F.	NGR 16-001-102	2045
11	UNIV MARYLAND-BALT	Kelsall, T.	HQ-SG	Misner, C. W.	NGR 21-002-010	2145
11	UNIV MARYLAND-COL PK	Fainberg, J.	GSFC	Erickson, W. C.	NGL 21-002-029	2152
11	UNIV MARYLAND-COL PK	Fainberg, J.	GSFC	Kundu, M. R.	NGL 21-002-367	2156
11	UNIV MARYLAND-COL PK	Dubin, M.	HQ-SG	Opik, E. J.	NGR 21-002-002	2157
11	UNIV MARYLAND-COL PK	Weldon, J. M.	HQ-SG	Miller, M. H.	NGR 21-002-007	2159
11	UNIV MARYLAND-COL PK	Opp, A. G.	HQ-SG	Earl, J. A.	NGR 21-002-066	2160
11	UNIV MARYLAND-COL PK	Roman, N. G.	HQ-SG	Griem, H. R.	NGR 21-002-073	2161
11	UNIV MARYLAND-COL PK	Weldon, J. M.	HQ-SG	Kunder, M. R.	NGR 21-002-199	2164
11	UNIV MARYLAND-COL PK	Opp, A. G.	HQ-SG	Gloeckler, G.	NGR 21-002-224	2169
11	UNIV MARYLAND-COL PK	Bogges, N. W.	HQ-SG	Currie, D. G.	NGR 21-002-301	2177
11	UNIV OF MASS-AMHERST	Weldon, J. M.	HQ-SG	Strong, J.	NGL 22-010-025	2398
11	UNIV OF MASS-AMHERST	Weldon, J. M.	HQ-SG	Huevenin, G. R.	NGR 22-010-039	2401
11	UNIV OF MASS-AMHERST	Brunk, W. E.	HQ-SL	Irvine, W. M.	NGL 22-010-023	2397
11	UNIV MICH-ANN ARBOR	Pelz, D. T.	GSFC	Carignan, G. R.	NAS 5-11309	2432
11	UNIV MICH-ANN ARBOR	Weldon, J. M.	HQ-SG	Mohler, O. C.	NGL 23-005-275	2451
11	UNIV MICH-ANN ARBOR	Kelsall, T.	HQ-SG	Hiltner, W. A.	NGR 23-005-464	2463
11	UNIV MICH-ANN ARBOR	Weldon, J. M.	HQ-SG	Teske, R. G.	NGR 23-005-543	2473
11	UNIV MICH-ANN ARBOR	Oertel, G. K.	HQ-SG	Haddock, F. T.	NGR 23-005-549	2475
11	U MINN-MNPLS-ST PAUL	Cameron, R. M.	ARC	Ney, E. P.	NGR 24-005-267	2522
11	U MINN-MNPLS-ST PAUL	Cameron, R. M.	ARC	Ney, E. P.	NSR 24-005-238	2526

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11	U MINN-MNPLS-ST PAUL	Krome, H. O.	MSFC	Waddington, C. J.	NAS 8-26845
11	U MINN-MNPLS-ST PAUL	Krome, H. O.	MSFC	Waddington, C. J.	NAS 8-27977
11	U MINN-MNPLS-ST PAUL	Opp, A. G.	HQ-SG	Waddington, C. J.	NGR 24-005-050
11	U MINN-MNPLS-ST PAUL	Dubin, M.	HQ-SG	Nier, A. O.	NGR 24-005-196
11	U MINN-MNPLS-ST PAUL	Roman, N. G.	HQ-SG	Luyten, W. J.	NSR 24-005-245
11	UNIV OF MONTEVALLO	Hoover, R. B.	MSFC	Foreman, J. W., Jr.	NAS 8-27301
11	UNIV NEBRASKA-LINCLN	Kalet, M. W.	GSFC	Samson, J. A.	NAS 5-23125
11	UNIV NEW HAMPSHIRE	Trainor, J. H.	GSFC	Webber, W. R.	NAS 5-11276
11	UNIV NEW HAMPSHIRE	Wainscott, F. H.	GSFC	Arnoldy, R. L.	NAS 5-11694
11	UNIV NEW HAMPSHIRE	Weldon, J. M.	HQ-SG	Chupp, E. L.	NGL 30-002-018
11	UNIV NEW HAMPSHIRE	Opp, A. G.	HQ-SG	Chupp, E. L.	NGL 30-002-021
11	UNIV NEW HAMPSHIRE	Opp, A. G.	HQ-SG	Webber, W. R.	NGR 30-002-052
11	UNIV NEW HAMPSHIRE		HQ-SG	Webber, W. R.	NGR 30-002-087
11	UNIV OF NEW MEXICO	Dubin, M.	HQ-SG	Peterson, A. W.	NGR 32-004-068
11	UNIV OREGON-EUGENE	Cameron, R. M.	ARC	Donnelly, R. J.	NGR 38-003-035
11	UNIV OF PENNSYLVANIA	Dwornik, S. E.	HQ-SL	Faul, H.	NGR 39-010-123
11	UNIV OF PITTSBURGH	Sobieski, S.	HQ-SG	Gerjuoy, E.	NGR 39-011-150
11	UNIV OF ROCHESTER	Cameron, R. M.	ARC	Pipher, J. L.	NGR 33-019-127
11	UNIV OF ROCHESTER	Ott, E. J.	HQ-SG	Baumeister, P. W.	NGL 33-019-003
11	UNIV OF ROCHESTER	Weldon, J. M.	HQ-SG	Clark, A.	NGR 33-019-126
11	UNIV OF SANTA CLARA	Poppoff, L.	ARC	Barker, W. A.	NGR 05-017-027
11	UNIV TENNESSEE-KNOXV	Lansing, D. L.	LARC	Gruschka, H. G.	NGL 43-001-075
11	UNIV TEXAS-AUSTIN	Mason, R. H.	ARC	Ulrich, B. T.	NGR 44-012-240
11	UNIV TEXAS-AUSTIN	Potter, A. E.	JSC	Smith, H. J.	NAS 9-11419
11	UNIV TEXAS-AUSTIN	Mansur, S. R.	JSC	Henize, K. G.	NAS 9-13176
11	UNIV TEXAS-AUSTIN	Sobieski, S.	HQ-SG	Vanden Bout, P. A.	NGR 44-012-209
11	UNIV TEXAS-AUSTIN	Weldon, J. M.	HQ-SG	Lambert, D. L.	NGR 44-012-215
11	UNIV TEXAS-AUSTIN	Boggess, N. W.	HQ-SG	Evans, D. S.	NSR 44-012-206
11	UNIV TEXAS-AUSTIN		HQ-SL	Smith, H. J.	NASR 242
11	UNIV TEXAS-AUSTIN	Brunk, W. E.	HQ-SL	Douglas, J. N.	NGL 44-012-055
11	UNIV TEXAS-AUSTIN	Roman, N. G.	HQ-SL	Smith, H. J.	NGR 44-012-152
11	UNIV TEXAS-AUSTIN	Dwornik, S. E.	HQ-SL	Ingerson, F. E.	NGR 44-012-194
11	UNIV TEXAS-AUSTIN	Brunk, W. E.	HQ-SL	Smith, H. J.	NGR 44-012-202
11	UNIV TEXAS-AUSTIN	Strickland, A. T.	HQ-SM	Smith, H. J.	NGR 44-012-165
11	UNIV TEXAS-AUSTIN	Strickland, A. T.	HQ-SM	Mulholland, J. D.	NGR 44-012-219
11	UNIV TEXAS-DALLAS	Butler, P.	GSFC	Palmeira, R. A.	NAS 5-9075
11	UNIV TEXAS-DALLAS	Opp, A. G.	HQ-SG	McCracken, K. G.	NGR 44-004-121
11	UNIV TEXAS-DALLAS	Opp, A. G.	HQ-SG	Allum, F. R.	NGR 44-004-133
11	UNIV OF TOLEDO	Dubin, M.	HQ-SG	Witt, A. D.	NGR 36-010-022
11	UNIV OF VIRGINIA	Roman, N. G.	HQ-SG	Fredrick, L. W.	NGL 47-005-066
11	UNIV OF VIRGINIA	Roman, N. G.	HQ-SG	Frederick, L. W.	NGR 47-005-153
11	UNIV OF WASHINGTON	Reynolds, R. T.	ARC	Leovy, C. B.	NGR 48-002-139
11	UNIV OF WASHINGTON	Dubin, M.	HQ-SG	Hodge, P. W.	NGR 48-002-033
11	UNIV OF WASHINGTON	Brunk, W. E.	HQ-SL	Greene, T. F.	NGR 48-002-142
11	UNIV WISC-MADISON	White, W. A.	GSFC	Code, A. D.	NAS 5-1348
11	UNIV WISC-MADISON	Ponder, T. W.	MSFC	Kraushaar, W. L.	NAS 8-21015
11	UNIV WISC-MADISON	Boggess, N. W.	HQ-SG	Code, A. D.	NGL 50-002-013
11	UNIV WISC-MADISON	Roman, N. G.	HQ-SG	Kraushaar, W. L.	NGL 50-002-044
11	UNIV OF WYOMING	Opp, A. G.	HQ-SG	Tompkins, D. R., Jr.	NGR 51-001-035
11	VIRGINIA POLY INST		HQ-SL	McGee, H. A.	NGL 47-004-080
11	WASHINGTON UNIVERSTY	Dabbs, J. R.	MSFC	Israel, M. H.	NAS 8-26843
11	WASHINGTON UNIVERSTY	Krome, H. O.	MSFC	Israel, M. H.	NAS 8-27976
11	WASHINGTON UNIVERSTY	Opp, A. G.	HQ-SG	Klarmann, J.	NGR 26-008-001
11	WASHINGTON UNIVERSTY	Boggess, N. W.	HQ-SG	Friedlander, M. W.	NGR 26-008-069
11	WESLEYAN UNIVERSITY	Kondo, Y.	JSC	Page, T.	NGR 07-006-006
11	WESLEYAN UNIVERSITY	Ashworth, C. D.	HQ-SG	Page, T.	NGR 07-006-004
12	ARIZONA STATE UNIV	Harris, J. W.	JSC	Moore, C. B.	NGR 03-001-057
12	BROOME COMMUNITY COL	Verostko, C. E.	HQ-EC	Forsythe, R. K.	NAS 9-12870

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12	BROWN UNIVERSITY	Hansen, F. C.	ARC	Mason, E. A.	NGL 40-002-059	3124
12	CALIF INST OF TECH	Harris, J. W.	JSC	Silver, L. T.	NGL 05-002-187	1205
12	CALIF INST OF TECH	Harris, J. W.	JSC	Wasserburg, G. J.	NGL 05-002-188	1206
12	CAL STATE U-FULLERTN	Young, R. S.	HQ-SL	Wegner, P. A.	NGR 05-071-008	1243
12	CAL STATE U-SAN JOSE	Wydeven, T. J.	ARC	Spitze, L. A.	NGR 05-046-011	1254
12	CASE WESTERN RESERVE	Quattrone, P. D.	ARC	Yeager, E.	NGR 36-027-050	2943
12	CASE WESTERN RESERVE	Quattrone, P. D.	ARC	Yeager, E.	NGR 36-027-052	2945
12	CASE WESTERN RESERVE	Harris, J. W.	JSC	Radcliffe, S. V.	NGL 36-027-057	2934
12	COLUMBIA UNIVERSITY	Thom, K.	HQ-NS	Novick, R.	NGL 33-008-009	2728
12	CORNELL UNIVERSITY	Harris, J. W.	JSC	Morrison, G. H.	NGR 33-010-166	2774
12	CORNELL UNIVERSITY	Young, R. S.	HQ-SL	Sagan, C.	NGR 33-010-101	2767
12	FEDERAL CITY COLLEGE	Halpert, G.	GSFC	Nottingham, W. C.	NGR 09-050-003	1745
12	FEDERAL CITY COLLEGE	Mundy, J. R.	GSFC	Ng, G.	NGR 09-050-007	1746
12	GEORGE WASHINGTON U	McAvoy, N.	GSFC	Filipesu, N.	NGL 09-010-008	1752
12	HARVARD UNIVERSITY	Harris, J. W.	JSC	Hays, J. F.	NGL 22-007-247	2230
12	HARVARD UNIVERSITY	Harris, J. W.	JSC	Hays, J. F.	NGR 22-007-199	2237
12	INDIANA U-BLOOMINGTN	Harris, J. W.	JSC	Meinschein, W. G.	NAS 9-9974	1975
12	INDIANA U-BLOOMINGTN	Harris, J. W.	JSC	Meinschein, W. G.	NGR 15-003-105	1982
12	INDIANA U-BLOOMINGTN	Geib, D. S.	HQ-SL	Hayes, J. M.	NGR 15-003-118	1983
12	JOHNS HOPKINS UNIV	Young, R. S.	HQ-SL	Eugster, H. P.	NGR 21-001-037	2134
12	LEHIGH UNIVERSITY	Harris, J. W.	JSC	Goldstein, J. I.	NGR 39-007-056	3057
12	LEHIGH UNIVERSITY	Snyder, R. S.	MSFC	Vanderhoff, J. W.	NAS 8-28654	3050
12	MASS INST OF TECH	Quattrone, P. D.	ARC	Reid, R. C.	NGR 22-009-312	2337
12	MASS INST OF TECH	Quattrone, P. D.	ARC	Reid, R. C.	NGR 22-009-723	2367
12	MASS INST OF TECH	Harris, J. W.	JSC	Biemann, K.	NGR 22-009-543	2349
12	MASS INST OF TECH	Harris, J. W.	JSC	Burns, R. G.	NGR 22-009-551	2350
12	MASS INST OF TECH	Soffen, G. A.	LARC	Biemann, K.	NAS 1-9684	2246
12	MASS INST OF TECH	Snyder, R. S.	MSFC	Gatos, H. C.	NGR 22-009-517	2345
12	MASS INST OF TECH	Geisch, D. S.	HQ-SL	Biemann, K.	NGR 22-009-005	2332
12	MASS INST OF TECH	Young, R. S.	HQ-SL	Rich, A.	NGR 22-009-277	2336
12	MOREHOUSE COLLEGE	Smith, R. E.	MSFC	Meredeth, C. W.	NGL 11-008-001	1857
12	NO DAKOTA STATE UNIV	Hall, L. B.	HQ-SL	Hill, T. W.	NGR 35-001-012	2925
12	OLD DOMINION UNIV	Johnston, N. J.	LARC	Williams, R. L.	NGL 47-003-008	3449
12	OREGON STATE UNIV	Tuttle, F. B.	HQ-FE	Williamson, S. E.	NGR 38-002-018	3018
12	POLY INST BROOKLYN	Young, R. S.	HQ-SL	Eirich, F. R.	NGR 33-006-070	2827
12	POMONA COLLEGE	Soffen, G. A.	LARC	Baird, A. K.	NAS 1-11854	1257
12	PRAIRIE VIEW A&M COL	Pohly, J. G.	HQ-PY	Stubblefield, C. T.	NGR 44-033-014	3208
12	PRINCETON UNIVERSITY	Harris, J. W.	JSC	Brown, G. E.	NGL 31-001-283	2646
12	PRINCETON UNIVERSITY	Harris, J. W.	JSC	Hollister, L. S.	NGR 31-001-205	2657
12	PRINCETON UNIVERSITY		LERC	Glassman, I.	NGL 31-001-129	2642
12	PRINCETON UNIVERSITY		MSFC		NAS 8-11101	2632
12	RENSSELAER POLY-NY	Young, R. S.	HQ-SL	Ferris, J. P.	NGR 33-018-148	2836
12	ST JOSEPH COL-CONN	Young, R. S.	HQ-SL	Murphy, M. E.	NGR 07-011-001	1692
12	STANFORD UNIVERSITY	Ponnamperuma, C. A.	ARC	Kuhlmann, K. F.	NGL 05-020-250	1311
12	STANFORD UNIVERSITY	Ponnamferuma, C. A.	ARC	Giese, A. C.	NGR 05-020-335	1328
12	STANFORD UNIVERSITY	Billingham, J.	ARC	Taube, H.	NGR 05-020-514	1338
12	STANFORD UNIVERSITY	Mitz, M. A.	HQ-SL	Von Eshleman, V. R.	NGR 05-020-530	1341
12	STATE UNIV NY-BUFFAL	Young, R. S.	HQ-SL	Danielli, J. F.	NGR 33-015-002	2844
12	STATE U NY-STONY BRK	Harris, J. W.	JSC	Schaeffer, O. A.	NGL 33-015-174	2856
12	STATE U NY-STONY BRK	Harris, J. W.	JSC	Funkhouser, J.	NGR 33-015-133	2858
12	TEMPLE UNIVERSITY	Lad, R. A.	LERC	Labes, M. M.	NGR 39-012-024	3098
12	TEXAS TECH UNIV	Wilson, C.	LARC	Gully, A. J.	NAS 1-9506	3274
12	UNIV ALA-BIRMINGHAM	Young, R. S.	HQ-SL	Lacey, J. C., Jr.	NGR 01-010-001	1035
12	UNIV OF ARIZONA	Harris, J. W.	JSC	Nagy, B.	NGR 03-002-237	1157
12	UNIV CALIF-BERKELEY	Wydeven, T. J.	ARC	Merrill, R. P.	NGR 05-003-478	1431
12	UNIV CALIF-BERKELEY	Harris, J. W.	JSC	Calvin, M.	NAS 9-7889	1386
12	UNIV CALIF-BERKELEY	Harris, J. W.	JSC	Calvin, M.	NGR 05-003-418	1415
12	UNIV CALIF-BERKELEY	Harris, J. W.	JSC	Burlingame, A. L.	NGR 05-003-435	1418

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12	UNIV CALIF-BERKELEY	Young, R. S.	HQ-SL	Jukes, T. H.	NGR 05-003-460	1427
12	UNIV CALIF-L ANGELES	Chang, S.	ARC	Kaplan, I. R.	NAS 2-7440	1469
12	UNIV CALIF-L ANGELES	Harris, J. W.	JSC	Wasson, J. T.	NGL 05-007-367	1493
12	UNIV CALIF-SAN DIEGO	Harris, J. W.	JSC	Arnold, J. R.	NGL 05-009-148	1545
12	UNIV CALIF-SAN DIEGO	Harris, J. W.	JSC	Marti, K.	NGL 05-009-150	1546
12	UNIV CALIF-SAN DIEGO	Harris, J. W.	JSC	Engel, A. E.	NGR 05-009-152	1557
12	UNIV CALIF-SAN DIEGO	Young, R. S.	HQ-SL	Miller, S. L.	NGR 05-009-218	1567
12	UNIV CALIF-SAN DIEGO	Bryson, R. P.	HQ-SM	Waggoner, J. A.	NGR 05-009-197	1565
12	UNIV CALIF-S CRUZ	Reinesch, R.	ARC	Evleth, E. M.	NGL 05-061-004	1580
12	UNIV OF CHICAGO	Harris, J. W.	JSC	Clayton, R. N.	NGL 14-001-169	1925
12	UNIV OF CONNECTICUT	Antoine, A. C.	LERC	Wells, A. F.	NGR 07-002-058	1700
12	UNIV OF DENVER	Quattrone, P. D.	ARC	Ross, L. W.	NGR 06-004-125	1686
12	UNIV OF DETROIT	Young, R. S.	HQ-SL	Szutka, A.	NGR 23-002-001	2423
12	UNIV OF FLORIDA	Schell, J. T.	MSFC	Patterson, E. P.	NAS 8-20247	1789
12	UNIV OF HOUSTON	Harris, J. W.	JSC	Oro, J.	NGR 44-005-125	3312
12	UNIV OF HOUSTON	Young, R. S.	HQ-SL	Becker, R. S.	NGR 44-005-091	3310
12	UNIV ILLINOIS-CHICGO	Young, R. S.	HQ-SL	Boyer, J. H.	NGR 14-012-004	1948
12	UNIV ILLINOIS-URBANA	Thom, K.	HQ-NS	Miley, G. H.	NGR 14-005-183	1966
12	UNIV MARYLAND-COL PK	Conrath, B. J.	GSFC	Ponnamperuma, C.	NAS 5-23237	2148
12	UNIV MARYLAND-COL PK	Harris, J. W.	JSC	Ponnamperuma, C.	NGR 21-002-329	2183
12	UNIV MARYLAND-COL PK	Simoneau, R. J.	LERC	Sengers, J. V.	NGR 21-002-344	2185
12	UNIV MARYLAND-COL PK	Geib, D. S.	HQ-SL	Ponnamperuma, C.	NGR 21-002-317	2182
12	UNIV OF MIAMI	Harris, J. W.	JSC	Fox, S. W.	NGR 10-007-088	1812
12	UNIV OF MIAMI	Young, R. S.	HQ-SL	Fox, S. W.	NGR 10-007-008	1808
12	UNIV OF MIAMI	Young, R. S.	HQ-SL	Harada, K.	NGR 10-007-052	1809
12	UNIV MICH-ANN ARBOR	Lanford, W. E.	LARC	Stedman, D. H.	NGR 23-005-599	2479
12	U MINN-MNPLS-ST PAUL	Young, R. S.	HQ-SL	Swain, F. M.	NGR 24-005-275	2523
12	UNIV MO-ROLLA	Harris, J. W.	JSC	Manuel, O. K.	NGR 26-003-057	2570
12	UNIV OF NEW MEXICO	Harris, J. W.	JSC	Keil, K.	NGL 32-004-063	2701
12	UNIV OF NEW MEXICO	Soffen, G. A.	LARC	Keil, K.	NAS 1-11855	2693
12	UNIV N CAR-CHPL HILL	Harris, J. W.	JSC	Isenhour, T. L.	NGR 34-003-048	2922
12	UNIV OREGON-EUGENE	Harris, J. W.	JSC	Goles, G. G.	NGL 38-003-024	3026
12	UNIV OF PITTSBURGH	Harris, J. W.	JSC	Cohen, A. J.	NGR 39-011-138	3113
12	UNIV OF SO CAROLINA	Young, R. S.	HQ-SL	Rohlfing, D. L.	NGR 41-002-034	3145
12	UNIV SO MISSISSIPPI	Johnston, N. J.	LARC	Thames, S. F.	NGR 25-005-005	2547
12	UNIV TEXAS-DALLAS	Harris, J. W.	JSC	Helsley, C. E.	NGR 44-004-117	3378
12	UNIV OF TULSA	Harris, J. W.	JSC	Barker, C.	NGR 37-008-002	3009
12	UNIV OF UTAH	Wasel, R. A.	HQ-RP	Baer, A. D.	NGL 45-003-019	3417
12	UNIV WISC-MADISON	Harris, J. W.	JSC	Haskin, L. A.	NGL 50-002-148	3583
12	UNIV WISC-MADISON	Redding, E. R.	HQ-PY	Bock, R. M.	NGL 50-002-001	3577
12	UPPSALA UNIVERSITY		HQ-SG	Bockasten, K.	NASR 174	3627
12	VIRGINIA COMNWLTH U	Johnston, N. J.	LARC	Stump, B. L.	NGR 47-002-041	3493
12	VIRGINIA POLY INST	Walter, L. S.	GSFC	Gibbs, G. V.	NGR 47-004-093	3510
12	VIRGINIA POLY INST	Phillips, D. H.	LARC	Schug, J. C.	NGL 47-004-040	3501
12	WORCESTER POLY INST	Shapira, J.	ARC	Weiss, A.	NGR 22-017-023	2409
12	YALE UNIVERSITY	Harris, J. W.	JSC	Skinner, B. J.	NGR 07-004-134	1717
13	ALABAMA A&M UNIV	Morgan, S. H., Jr.	MSFC	George, M. C.	NGR 01-001-007	1000
13	ALABAMA A&M UNIV	Pohly, J. G.	HQ-PY	George, M. C.	NGR 01-001-017	1003
13	ALABAMA A&M UNIV	Pohly, J. G.	HQ-PY	Lee, C. T.	NGR 01-001-020	1005
13	ARIZONA STATE UNIV		ARC		NAS 2-2640	1109
13	ATHENS COLLEGE	Frary, S. G.	MSFC	McNutt, R. C.	NAS 8-28058	1008
13	AUBURN UNIV-AUBURN	Jones, B. P.	MSFC	Vachon, R. I.	NAS 8-26579	1014
13	AUBURN UNIV-AUBURN	Holland, R. H.	MSFC	Fitzpatrick, P. M.	NAS 8-28366	1022
13	BOSTON COLLEGE	Danchenko, V.	GSFC	Fang, P.	NGR 22-003-019	2204
13	BOSTON COLLEGE	Hallenbeck, D. R.	HQ-SG	Eather, R. H.	NGR 22-003-017	2202
13	BOSTON UNIVERSITY		HQ-SG		NGR 22-004-035	2214
13	BOWIE STATE COLLEGE	Caruso, A. J.	GSFC	Bhatia, M. S.	NGR 21-027-010	2126
13	BRIGHAM YOUNG UNIV	Kavanagh, L. D., Jr.	HQ-SG	Jones, D. E.	NGR 45-001-011	3410

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13	BROWN UNIVERSITY	Coates, R. J.	GSFC	Heller, G. S.	NGL 40-002-042	3123
13	BROWN UNIVERSITY	Walker, G. H.	LARC	Loferski, J. J.	NGR 40-002-093	3127
13	CALIF INST OF TECH	Hall, C. F.	ARC	Munch, G.	NAS 2-5606	1178
13	CALIF INST OF TECH	Hall, C. F.	ARC	Munch, G.	NAS 2-6556	1179
13	CALIF INST OF TECH	Meese, K. J.	GSFC	Stone, E. C.	NAS 5-9312	1181
13	CALIF INST OF TECH	Davis, M. A.	GSFC	Stone, D. C.	NAS 5-11066	1182
13	CALIF INST OF TECH	Eichelman, W. F.	JSC	Burnet, D.	NAS 9-12270	1191
13	CALIF INST OF TECH	Harris, J. W.	JSC	Epstein, S.	NGL 05-002-190	1207
13	CALIF INST OF TECH		LARC	Liepmann, H. W.	NGR 05-002-220	1222
13	CALIF INST OF TECH	Wasel, R. A.	HQ-RP	Knauss, W. G.	NGL 05-002-005	1196
13	CALIF INST OF TECH	Kavanagh, L. D.	HQ-SG	Davis, L.	NGR 05-002-259	1228
13	CALIF INST OF TECH	Mitz, M. A.	HQ-SL	Vogt, R. E.	NGR 05-002-225	1223
13	CAL STATE U-LG BEACH	Breitwieser, R.	LERC	Luke, K. P.	NGR 05-013-010	1245
13	CARNEGIE-MELLON UNIV	Shulman, A. R.	GSFC	Lee, S. R.	NGR 39-087-037	3041
13	CARNEGIE-MELLON UNIV	Walker, G. H.	LARC	Milnes, A. G.	NGR 39-087-021	3038
13	CASE WESTERN RESERVE	O'Keefe, J. A.	GSFC	Cooper, A. R.	NGR 36-003-100	2935
13	CASE WESTERN RESERVE	Harris, J. W.	JSC	Radcliffe, S. V.	NGR 36-027-021	2937
13	CASE WESTERN RESERVE	Harris, J. W.	JSC	Cooper, R. A.	NGR 36-027-028	2938
13	CATHOLIC UNIVERSITY	Schutt, J. B.	GSFC	Tomoyasu, T.	NGR 09-005-072	1738
13	CATHOLIC UNIVERSITY	Fichtel, C. E.	GSFC	Crannel, H.	NGR 09-005-077	1740
13	CATHOLIC UNIVERSITY	Deissler, R. G.	LERC	Ling, S. C.	NGR 09-005-076	1739
13	CATHOLIC UNIVERSITY	Kavanagh, L. D.	HQ-SG	Whang, Y. C.	NGR 09-005-063	1737
13	CENTRAL ST UNIV-OHIO	Pohly, J. G.	HQ-PY	Hartzler, E. A.	NGR 36-033-001	2949
13	CITY COLLEGE OF N Y	Putre, H.	LERC	Pfeffer, R.	NGL 33-013-029	2711
13	CITY COLLEGE OF N Y	Thom, K.	HQ-NS	Tchen, C. M.	NGL 33-013-034	2712
13	CLARK UNIVERSITY	Urban, E. W.	MSFC	McEvoy, J. P.	NAS 8-28900	2215
13	COL OF HOLY CROSS	Paul, F. W.	GSFC	Gunter, R. C.	NGR 22-091-002	2216
13	COLLEGE OF WM & MARY	Wilson, J. W.	LARC	Remler, E. A.	NAS 1-11808	3431
13	COLLEGE OF WM & MARY	Smith, D. D.	LARC	Funsten, H. O.	NGR 47-006-010	3434
13	COLLEGE OF WM & MARY	Fales, C. L.	LARC	Soest, J. F.	NGR 47-006-050	3435
13	COLORADO STATE UNIV	Harris, J. W.	JSC	Lindsay, W. A.	NGR 06-002-119	1643
13	COLORADO STATE UNIV	Laurence, J. C.	LERC	Wilmsen, C. W.	NGR 06-002-094	1638
13	COLUMBIA UNION COL	McLean, J. T.	GSFC	Mohr, E. I.	NGR 21-023-001	2128
13	COLUMBIA UNIVERSITY	Harris, J. W.	JSC	Horai, K.	NGR 33-008-169	2739
13	COLUMBIA UNIVERSITY	Strangway, D. W.	JSC	Horai, K.	NGR 33-008-174	2740
13	COLUMBIA UNIVERSITY	Harris, J. W.	JSC	Horai, K.	NGR 33-008-177	2741
13	CORNELL UNIVERSITY	Harris, J. W.	JSC	Gold, T.	NGR 33-010-137	2770
13	CORNELL UNIVERSITY	Soffen, G. A.	LARC	Sagan, C.	NAS 1-9683	2743
13	CORNELL UNIVERSITY		LARC	Seebass, A. R.	NGL 33-010-054	2758
13	CORNELL UNIVERSITY	Allario, F.	LARC	Cool, T. A.	NGL 33-010-064	2759
13	CORNELL UNIVERSITY	Laurence, J. C.	LERC	Ashcroft, N. W.	NGR 33-010-188	2779
13	CORNELL UNIVERSITY	Laurence, J. C.	LERC	Ruoff, A. L.	NGR 33-010-189	2780
13	CORNELL UNIVERSITY		HQ-RE	Tang, C. L.	NGR 33-010-051	2764
13	CORNELL UNIVERSITY	Hallenbeck, D. R.	HQ-SG	Brice, N. M.	NGR 33-010-161	2773
13	DARTMOUTH COLLEGE	Meese, K. J.	GSFC	Laaspere, T.	NAS 5-9305	2601
13	DARTMOUTH COLLEGE	Hallenbeck, D. R.	HQ-SG	Sonnerup, B. U.	NGR 30-001-040	2606
13	DELAWARE STATE COL	Pohly, J. G.	HQ-PY	Helmy, E. M.	NGR 08-002-001	1721
13	DELAWARE STATE COL	Pohly, J. G.	HQ-PY	Helmy, E. M.	NGR 08-002-005	1723
13	DREXEL UNIVERSITY	Mitz, M. A.	HQ-SL	Soberman, R. K.	NGR 39-004-042	3048
13	DUKE UNIVERSITY	Trombka, I. J.	GSFC	O'Foghluudha, F.	NGR 34-001-041	2888
13	DUKE UNIVERSITY	Ahrendt, M. H.	HQ-FE	Reynolds, T. D.	NSR 34-001-025	2890
13	FAIRLEIGH-DICKINSON U	Harris, J. W.	JSC	Adams, J. B.	NGL 31-006-011	2621
13	GEORGE WASHINGTON U		GSFC		NAS 5-11191	1749
13	GEORGE WASHINGTON U	Harris, J. W.	JSC	Wasilewski, P.	NGR 09-010-080	1759
13	GEORGIA INST OF TECH		MSFC		NAS 8-11242	1828
13	GEORGIA INST OF TECH		MSFC		NAS 8-11389	1829
13	GEORGIA INST OF TECH	Smith, R. E.	MSFC	Justus, C. G.	NAS 8-26658	1830
13	GEORGIA INST OF TECH	Kerr, J. H.	MSFC	Shackelford, R. G.	NAS 8-27681	1832

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13	GRAMBLING COLLEGE	Pohly, J. G.	HQ-PY	Terrell, J.	NGR 19-011-009	2082
13	GRAMBLING COLLEGE	Pohly, J. G.	HQ-PY	Cross, M. A.	NGR 19-011-014	2085
13	GRAMBLING COLLEGE	Pohly, J. G.	HQ-PY	Narasimhamurty H. A.	NGR 19-011-016	2086
13	GRAMBLING COLLEGE	Kavanagh, L. D., Jr.	HQ-SG	Cummings, W. D.	NGR 19-011-007	2080
13	HAMPTON INSTITUTE		HQ-PY		NGR 47-020-005	3441
13	HARVARD UNIVERSITY	Staff, W. O.	GSFC	Goldberg, L.	NAS 5-9274	2219
13	HARVARD UNIVERSITY	Plotkin, H. H.	GSFC	Bloembergen, N.	NGL 22-007-117	2227
13	HIRAM COLLEGE	Buckley, D. H.	LERC	Wheeler, D. R.	NAS 3-17353	2952
13	HOWARD UNIVERSITY	Okeefe, J. A.	GSFC	Thorpe, A. N.	NGL 09-011-006	1767
13	HOWARD UNIVERSITY	Mentall, J. E.	GSFC	Thorpe, A. N.	NGR 09-011-004	1770
13	INDIANA U-BLOOMINGTN	Diaz, A. V.	LARC	Hayes, J. M.	NAS 1-12055	1973
13	JOHNS HOPKINS UNIV	McFadin, L. B.	JSC	Fastie, W. G.	NAS 9-11528	2131
13	JOHNS HOPKINS UNIV	Weinberg, I.	HQ-RW	Feldman, C.	NGR 21-009-033	2141
13	JOHNS HOPKINS UNIV	Mitz, M. A.	HQ-SL	Krimigis, S. M.	NGR 21-001-097	2137
13	KENT STATE UNIV	Brown, G. V.	LERC	Johnson, D. L.	NGR 36-007-027	2953
13	LEHIGH UNIVERSITY	Kondo, Y.	JSC	McCluskey, G. E., Jr.	NGR 39-007-061	3058
13	LEHIGH UNIVERSITY	Harris, J. W.	JSC	Sclar, C. B.	NGR 39-007-064	3059
13	LA STATE U-BAT ROUGE	Craddock, W.	JSC	Jones, W. V.	NAS 9-10986	2092
13	MARQUETTE UNIVERSITY	Swetnick, M. T.	HQ-ER	Markowitz, W.	NGR 50-001-010	3560
13	MASS INST OF TECH	Davis, M. A.	GSFC	Bridge, H. S.	NAS 5-11062	2262
13	MASS INST OF TECH	Harris, J. W.	JSC	Simmons, G.	NGR 22-009-540	2348
13	MASS INST OF TECH	Harris, J. W.	JSC	Westphal, W. B.	NGR 22-009-597	2352
13	MASS INST OF TECH	Randall, J. L.	MSFC	Hoversten, E. V.	NAS 8-27733	2276
13	MASS INST OF TECH	Dalins, I.	MSFC	Gatos, H. C.	NGL 22-009-125	2318
13	MASS INST OF TECH		HQ-MT		NGR 22-009-735	2372
13	MASS INST OF TECH	Meson, J. K.	HQ-RE	Kennedy, R. S.	NGL 22-009-013	2311
13	MASS INST OF TECH	Kavanagh, L. D., Jr.	HQ-SG	Bridge, H. S.	NGL 22-009-015	2313
13	MASS INST OF TECH	Kavanagh, L. D., Jr.	HQ-SG	Bridge, H. S.	NGR 22-009-372	2341
13	MASS INST OF TECH	Roman, N. G.	HQ-SG	Clark, G. W.	NGR 22-009-785	2375
13	MASS INST OF TECH	Kavanagh, L. D., Jr.	HQ-SG	Bridge, H. S.	NGR 22-009-786	2376
13	MASS INST OF TECH	Mitz, M. A.	HQ-SL	Shapiro, I. I.	NGR 22-009-626	2357
13	MICHIGAN STATE UNIV		LARC		NAS 1-6860	2412
13	MICHIGAN STATE UNIV	Blue, J. W.	LERC	Katyal, O.	NGR 23-004-056	2416
13	MONTANA STATE UNIV	Decher, R.	MSFC	Hendricks, J. B.	NAS 8-28202	2585
13	MOREHOUSE COLLEGE	Pohly, J. G.	HQ-PY	Spight, C.	NGR 11-008-002	1858
13	NO CAROLINA STATE U	Golden, R. L.	JSC	Goldstein, J. I.	NAS 9-9522	2897
13	NO CAROLINA STATE U	Hendricks, H. D.	LARC	Monteith, L. K.	NGL 34-002-098	2905
13	NO CAROLINA STATE U	Thom, K.	HQ-NS	Bennett, W. H.	NGL 34-002-017	2899
13	NO CAROLINA STATE U	Thom, K.	HQ-NS	Hassan, H.	NGR 34-002-177	2910
13	NORTHEASTERN UNIV	Johnson, C.	GSFC	Weiss, K.	NGL 22-011-025	2382
13	NORTHEASTERN UNIV	Harris, J. W.	JSC	Perry, C. H.	NGR 22-011-069	2383
13	NORTHWESTERN UNIV	Lad, R. A.	LERC	Waber, J. T.	NGL 14-007-081	1895
13	NORTHWESTERN UNIV		HQ-RR		NSR 14-007-037	1904
13	OAKLAND UNIVERSITY	Eandi, B. K.	JSC	Haskell, R. E.	NGR 23-054-006	2422
13	OHIO STATE UNIV	Haggard, K. V.	LARC	Nerem, R. M.	NGR 36-008-163	2973
13	OLD DOMINION UNIV	Outlaw, R. A.	LARC	Cox, J. L.	NGR 47-003-040	3453
13	OLD DOMINION UNIV	Outlaw, R. A.	LARC	Pittman, M. A.	NGR 47-003-043	3454
13	OLD DOMINION UNIV	Phillips, D. H.	LARC	Ake, R. L.	NGR 47-003-048	3455
13	OLD DOMINION UNIV	McCormick, M. P.	LARC	Chu, W. P.	NGR 47-003-069	3458
13	OLD DOMINION UNIV	Outlaw, R. A.	LARC	Cox, J. L.	NGR 47-003-077	3460
13	OLD DOMINION UNIV	Wilson, J. W.	LARC	Khandelwal, G. S.	NGR 47-003-078	3461
13	OLD DOMINION UNIV	Melfi, L. T., Jr.	LARC	Clay, F. P.	NGR 47-003-082	3462
13	OREGON STATE UNIV	Harris, J. W.	JSC	Schmitt, R. A.	NGL 38-002-039	3015
13	PENNSYLVANIA STATE U	Harris, J. W.	JSC	Roy, R.	NGR 39-009-183	3085
13	PENNSYLVANIA STATE U	Harris, J. W.	JSC	Muan, A.	NGR 39-009-184	3086
13	PENNSYLVANIA STATE U	Harris, J. W.	JSC	Smith, D. K.	NGR 39-009-186	3087
13	PENNSYLVANIA STATE U	Roberts, W. T.	MSFC	Quinn, R. G.	NGR 39-009-132	3082
13	PENNSYLVANIA STATE U	Schmerling, E. R.	HQ-SG	Ross, W. J.	NGL 39-009-002	3070

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13	PORTLAND STATE UNIV	Gary, A.	MSFC	Gurevitch, M.	NAS 8-29256	3021
13	PRINCETON UNIVERSITY	Kourtidis, D. A.	ARC	Sirignano, W. A.	NAS 2-6705	2626
13	PRINCETON UNIVERSITY	Harris, J. W.	JSC	Hargraves, R. B.	NGR 31-001-208	2658
13	PRINCETON UNIVERSITY	Soffen, G. A.	LARC	Hargraves, R. B.	NAS 1-9705	2622
13	PRINCETON UNIVERSITY	Hoell, J. M., Jr.	LARC	Kelly, A. J.	NGR 31-001-263	2664
13	PRINCETON UNIVERSITY	Harrison, H. H.	HQ-NS	Kelly, A.	NGR 31-001-151	2650
13	PRINCETON UNIVERSITY	Strickland, A. T.	HQ-SM	Dicke, R. H.	NGR 31-001-202	2656
13	PURDUE UNIVERSITY	Potter, A. E.	JSC	Landgrebe, D. A.	NGL 15-005-112	1994
13	PURDUE UNIVERSITY	Harris, J. W.	JSC	Taylor, L. A.	NGL 15-005-175	1996
13	PURDUE UNIVERSITY	Harris, J. W.	JSC	Meyer, H. O.	NGR 15-005-157	2005
13	PURDUE UNIVERSITY	Harris, J. W.	JSC	Taylor, L. A.	NGR 15-005-164	2007
13	PURDUE UNIVERSITY		LARC		NGR 15-005-174	2008
13	RENSSELAER-CONN	Yeager, P. R.	LARC	Schwarz, H. J.	NGL 07-009-003	1691
13	RENSSELAER POLY-NY	Davidson, M. C.	MSFC	Wiedemeier, H. T.	NAS 8-26146	2830
13	RICE UNIVERSITY	Eichelman, W. F.	JSC	Freeman, J. W.	NAS 9-5911	3215
13	RICE UNIVERSITY	Harris, J. W.	JSC	Adams, J. A.	NGR 44-006-144	3226
13	RICE UNIVERSITY	Hudson, R. D.	JSC	Stebbins, R. F.	NGR 44-006-156	3228
13	RICE UNIVERSITY	Hudson, R. D.	JSC	Walters, G. K.	NGR 44-006-169	3229
13	RICE UNIVERSITY	Kavanagh, L. D.	HQ-SG	Stebbins, R. F.	NGL 44-006-012	3221
13	RICE UNIVERSITY	Kavanagh, L. D., Jr.	HQ-SG	Dessler, A. J.	NGR 44-006-137	3224
13	SO CAROLINA ST COL	Pohly, J. G.	HQ-PY	Payne, J. E.	NGR 41-006-001	3140
13	SO DAKOTA SCHL MINES	Peters, P. N.	MSFC	Weitzenkamp, L. A.	NAS 8-28060	3146
13	SO UNIV-BATON ROUGE	Pohly, J. G.	HQ-PY	Johnson, J. A.	NGR 19-005-003	2107
13	SO UNIV-BATON ROUGE		HQ-PY		NGR 19-005-009	2110
13	STANFORD UNIVERSITY	Hall, C. F.	ARC	Von Eshleman, V. R.	NAS 2-4671	1265
13	STANFORD UNIVERSITY	Sandler, H.	ARC	Anliker, M.	NGL 05-020-223	1307
13	STANFORD UNIVERSITY	Poppa, H. R.	ARC	Pound, G. M.	NGR 05-020-569	1346
13	STANFORD UNIVERSITY	Hickey, D. H.	ARC	Karamcheti, K.	NGR 05-020-676	1364
13	STANFORD UNIVERSITY	Meese, K. J.	GSFC	Helliwell, R. A.	NAS 5-9309	1280
13	STANFORD UNIVERSITY	Stone, R. G.	GSFC	Peterson, A. M.	NAS 5-23205	1289
13	STANFORD UNIVERSITY	Harris, J. W.	JSC	Nur, A.	NGR 05-020-633	1356
13	STANFORD UNIVERSITY	Soffen, G. A.	LARC	Levinthal, E. C.	NAS 1-9682	1258
13	STANFORD UNIVERSITY	Decher, R.	MSFC	Debra, D. B.	NAS 8-27333	1291
13	STANFORD UNIVERSITY	Potter, R. A.	MSFC	Fairbanks, W. M.	NGR 05-020-019	1323
13	STANFORD UNIVERSITY		HQ-RL	Karamcheti, K.	NGL 05-020-275	1313
13	STANFORD UNIVERSITY	Weinberg, I.	HQ-RW	Little, W. A.	NGL 05-020-242	1309
13	STANFORD UNIVERSITY	Harrison, H.	HQ-NS	Fairbanks, W. M.	NGL 05-020-015	1301
13	STANFORD UNIVERSITY	Schmerling, E. R.	HQ-SG	Helliwell, R. A.	NGL 05-020-008	1299
13	STANFORD UNIVERSITY	Kavanagh, L. D., Jr.	HQ-SG	Spreiter, J. R.	NGR 05-020-330	1327
13	STANFORD UNIVERSITY	Fellows, R. F.	HQ-SL	Gierasch, P. J.	NGL 05-020-103	1303
13	STATE UNIV NY-BUFFAL	Harris, J. W.	JSC	Cadenhead, D. A.	NGR 33-183-004	2848
13	STATE UNIV NY-BUFFAL	Allen, R. E.	MSFC	Bigazzi, P. E.	NAS 8-29745	2842
13	STATE U NY-STONY BRK	Harris, J. W.	JSC	Papike, J.	NGL 33-015-130	2855
13	STATE U NY-STONY BRK	Harris, J. W.	JSC	Carter, N. L.	NGR 33-015-154	2863
13	STATE U NY-STONY BRK	Soffen, G. A.	LARC	Owens, T.	NAS 1-10493	2849
13	STATE U NY-STONY BRK	Weldon, J. M.	HQ-SG	Stroke, G. W.	NGR 33-015-068	2857
13	STEVENS INST OF TECH	Harrison, H.	HQ-NS	Meissner, H.	NGL 31-003-020	2680
13	SYRACUSE UNIVERSITY	Mayes, W.	LARC	Dosanjh, D.	NGL 33-022-082	2871
13	TALLADEGA COLLEGE	Pohly, J. G.	HQ-PY	George, M. C.	NGR 01-007-001	1029
13	TALLADEGA COLLEGE	Carter, C. H.	HQ-PY	Morrison, R. A.	NGR 01-007-004	1030
13	TENNESSEE TECH U	Dibattista, J. D.	LARC	Kinslow, R.	NAS 1-10967	3152
13	TENNESSEE TECH U	Hardesty, C. A.	LARC	McLennan, W. D.	NGR 43-003-012	3153
13	TEXAS A&M UNIVERSITY	Richmond, R. G.	JSC	Smathers, J. B.	NAS 9-12586	3257
13	TEXAS A&M UNIVERSITY	Stebbins, F. J.	JSC	Stricklin, J. A.	NGL 44-001-044	3263
13	TEXAS A&M UNIVERSITY	Nowakowski, M. F.	MSFC	Porter, W. A.	NAS 8-26379	3245
13	TULANE UNIVERSITY	Weinberg, I.	HQ-RW	Hermann, A. M.	NGL 19-002-027	2114
13	TUSKEGEE INSTITUTE	Bannister, T. C.	MSFC	Reams, F. M.	NGR 01-005-003	1031
13	UNIV ALA-HUNTSVILLE	Kroes, R.	MSFC	Davis, J. H.	NAS 8-24612	1036

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13	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Gregory, J. C.	NAS 8-24953	1038
13	UNIV ALA-HUNTSVILLE	Naumann, R.	MSFC	Todd, F. C.	NAS 8-25055	1039
13	UNIV ALA-HUNTSVILLE	Hagyard, M.	MSFC	Wu, S. T.	NAS 8-25101	1040
13	UNIV ALA-HUNTSVILLE	Costes, N. C.	MSFC	Chung, T. J.	NAS 8-25102	1041
13	UNIV ALA-HUNTSVILLE	Kroes, R. L.	MSFC	Davis, J. H.	NAS 8-26793	1046
13	UNIV ALA-HUNTSVILLE	Jones, B. P.	MSFC	Horner, J. M.	NAS 8-27181	1049
13	UNIV ALA-HUNTSVILLE	Parnell, T. A.	MSFC	Gregory, J. C.	NAS 8-27336	1050
13	UNIV ALA-HUNTSVILLE	Lacy, L. L.	MSFC	Otto, G. H.	NAS 8-27809	1052
13	UNIV ALA-HUNTSVILLE	Peters, P. N.	MSFC	Gregory, J. G.	NAS 8-28071	1053
13	UNIV ALA-HUNTSVILLE	Hodges, B.	MSFC	Polge, R. J.	NAS 8-28545	1060
13	UNIV ALA-HUNTSVILLE	Wills, F. D.	MSFC	Eglitis, A.	NAS 8-28954	1063
13	UNIV ALA-HUNTSVILLE	Decher, R.	MSFC	Karr, G. R.	NAS 8-29316	1064
13	UNIV ALA-HUNTSVILLE	Smith, R. E.	MSFC	Wu, S. T.	NAS 8-29501	1066
13	UNIV ALA-HUNTSVILLE	Smith, R. E.	MSFC	Wu, S. T.	NAS 8-29543	1068
13	UNIV ALA-HUNTSVILLE	Davidson, M. C.	MSFC	Walter, H. U.	NAS 8-29650	1069
13	UNIV ALA-HUNTSVILLE	Urban, E. W.	MSFC	Otto, G.	NAS 8-30244	1072
13	UNIV ALA-TUSCALOOSA		MSFC		NAS 8-11249	1077
13	UNIV ALA-TUSCALOOSA	Bannister, T. C.	MSFC	Miyagawa, I.	NAS 8-28098	1081
13	UNIV ALA-TUSCALOOSA	Schafer, C.	MSFC	De'Smet, D. J.	NAS 8-29494	1083
13	UNIV ALA-TUSCALOOSA	Eby, P. B.	MSFC	Coulter, C. A.	NAS 8-29900	1084
13	UNIV ALASKA-FAIRBNKS	Kavanagh, L. D.	HQ-SG	Akasofu, S. I.	NGR 02-001-001	1102
13	UNIV ALASKA-FAIRBNKS	Kavanagh, L. D.	HQ-SG	Davis, T. N.	NGR 02-001-087	1103
13	UNIV OF ARIZONA	Hall, C. F.	ARC	Gehrels, T.	NAS 2-5604	1113
13	UNIV OF ARIZONA	Meese, K. J.	GSFC	L'Heureux, J. J.	NAS 5-11444	1118
13	UNIV OF ARIZONA	Craddock, W.	JSC	Krider, E. P.	NAS 9-11884	1134
13	UNIV OF ARIZONA	Griner, D. B.	MSFC	Tift, W. G.	NAS 8-27804	1130
13	UNIV OF ARIZONA	Wyman, C. L.	MSFC	Shack, R. V.	NAS 8-27863	1131
13	UNIV OF ARIZONA	Kurtz, R. L.	MSFC	Jacobs, S. F.	NAS 8-28661	1132
13	UNIV OF ARIZONA	Snyder, R. S.	MSFC	Bier, M.	NAS 8-29566	1133
13	UNIV OF ARIZONA	Kavanagh, L. D., Jr.	HQ-SG	Fan, C. Y.	NGR 03-002-107	1147
13	U ARKANSAS-MONTICELLO	Hardee, N.	JSC	Delton, R. A.	NAS 9-13196	1175
13	UNIV CALIF-BERKELEY	Billman, K. W.	ARC	Gustafson, T. K.	NGR 05-003-559	1440
13	UNIV CALIF-BERKELEY	Madden, J. J.	GSFC	Anderson, R. A.	NAS 5-11038	1378
13	UNIV CALIF-BERKELEY	Thole, J. M.	GSFC	Heckman, H. H.	NAS 5-23030	1380
13	UNIV CALIF-BERKELEY	Northrop, T. G.	GSFC	Kaufman, A. N.	NGL 05-003-220	1399
13	UNIV CALIF-BERKELEY	Harris, J. W.	JSC	Reynolds, J. H.	NGL 05-003-409	1404
13	UNIV CALIF-BERKELEY	Harris, J. W.	JSC	Price, P. B.	NGL 05-003-410	1405
13	UNIV CALIF-BERKELEY	Ghose, S.	JSC		NGR 05-003-486	1433
13	UNIV CALIF-BERKELEY	Harris, J. W.	JSC	Morrison, H. F.	NGR 05-003-512	1437
13	UNIV CALIF-BERKELEY	Ondrak, B. T.	MSFC	Price, P. B.	NAS 8-29603	1383
13	UNIV CALIF-BERKELEY	Kavanagh, L. D., Jr.	HQ-SG	Anderson, K. A.	NGL 05-003-017	1396
13	UNIV CALIF-BERKELEY	Oertel, G. K.	HQ-SG	Silver, S.	NGL 05-003-230	1400
13	UNIV CALIF-BERKELEY	Kavanagh, L. D., Jr.	HQ-SG	Anderson, K. A.	NGR 05-003-239	1409
13	UNIV CALIF-BERKELEY	Kavanagh, L. D., Jr.	HQ-SG	Mozer, F. S.	NGR 05-003-480	1432
13	UNIV CALIF-BERKELEY	Hallenbeck, D.	HQ-SG	Coleman, P. J., Jr.	NGR 05-007-305	1441
13	UNIV CALIF-BERKELEY	Mitz, M. A.	HQ-SL	Anderson, K. A.	NGR 05-003-458	1425
13	UNIV CALIF-DAVIS	Harris, J. W.	JSC	MacGregor, I. D.	NGR 05-004-076	1462
13	UNIV CALIF-L ANGELES	Dyal, P.	ARC	Schubert, G.	NAS 2-6791	1467
13	UNIV CALIF-L ANGELES	Hall, C. F.	ARC	Coleman, P. J.	NAS 2-7251	1468
13	UNIV CALIF-L ANGELES	Meese, K. J.	GSFC	Coleman, P. J.	NAS 5-9097	1470
13	UNIV CALIF-L ANGELES	Meese, K. J.	GSFC	Coleman, P. J.	NAS 5-9098	1471
13	UNIV CALIF-L ANGELES	Northrop, T. G.	GSFC	Wong, A. Y.	NGL 05-007-066	1487
13	UNIV CALIF-L ANGELES	Hardee, S. N.	JSC	Kaula, W. M.	NAS 9-12757	1480
13	UNIV CALIF-L ANGELES	Harris, J. W.	JSC	Wetherill, G. W.	NGL 05-007-287	1490
13	UNIV CALIF-L ANGELES	Harris, J. W.	JSC	Anderson, O. L.	NGL 05-007-330	1491
13	UNIV CALIF-L ANGELES	Harris, J. W.	JSC	Kaplan, I. R.	NGR 05-007-289	1501
13	UNIV CALIF-L ANGELES	Harris, J. W.	JSC	Wasson, J.	NGR 05-007-291	1502
13	UNIV CALIF-L ANGELES	Kavanagh, L. D.	HQ-SG	Coleman, P. J.	NGL 05-007-004	1483

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13	UNIV CALIF-L ANGELES	Kavanagh, L. D.	HQ-SG	Kennel, C. F.	NGL 05-007-190	1488
13	UNIV CALIF-L ANGELES	Hallenbeck, D.	HQ-SG	Sisco, G. L.	NGR 05-007-304	1504
13	UNIV CALIF-L ANGELES	Mitz, M. A.	HQ-SL	Coleman, P. J., Jr.	NGR 05-007-327	1508
13	UNIV CALIF-L ANGELES	Strickland, A. T.	HQ-SM	Kaula, W. M.	NGR 05-007-283	1500
13	UNIV CALIF-RIVERSIDE	Temkin, A.	GSFC	Poe, R. T.	NGL 05-008-005	1520
13	UNIV CALIF-SAN DIEGO	Hall, C. F.	ARC	Fillius, R. W.	NAS 2-5602	1523
13	UNIV CALIF-SAN DIEGO	Hall, C. F.	ARC	Fillius, R. W.	NAS 2-6552	1524
13	UNIV CALIF-SAN DIEGO	Carrion, W. J.	GSFC	Helstrom, C. W.	NGL 05-009-079	1542
13	UNIV CALIF-SAN DIEGO	Harris, J. W.	JSC	Arrhenius, G. O.	NGL 05-009-154	1547
13	UNIV CALIF-SAN DIEGO	Kavanagh, L. D.	HQ-SG	McIlwain, C. E.	NGL 05-005-007	1537
13	UNIV CALIF-SAN DIEGO	Schmerling, E. R.	HQ-SG	Helstrom, C. W.	NGR 05-009-075	1551
13	UNIV CALIF-SAN DIEGO	Kavanagh, L. D., Jr.	HQ-SG	Axford, W. I.	NGR 05-009-081	1553
13	UNIV CALIF-SAN DIEGO	Mitz, M. A.	HQ-SL	Axford, W. I.	NGR 05-009-177	1559
13	UNIV OF CHICAGO	Hall, C. F.	ARC	Simpson, J. A.	NAS 2-5601	1908
13	UNIV OF CHICAGO	Hall, C. F.	ARC	Simpson, J. A.	NAS 2-6551	1909
13	UNIV OF CHICAGO	Meese, K. J.	GSFC	Meyer, P.	NAS 5-9096	1910
13	UNIV OF CHICAGO	Meese, K. J.	GSFC	Simpson, J. A.	NAS 5-9366	1911
13	UNIV OF CHICAGO	Ferer, B. H.	GSFC	Simpson, J. A.	NAS 5-11037	1912
13	UNIV OF CHICAGO	Davis, M. A.	GSFC	Simpson, J. D.	NAS 5-11067	1913
13	UNIV OF CHICAGO	Harris, J. W.	JSC	Anders, E.	NGL 14-001-167	1924
13	UNIV OF CHICAGO	Harris, J. W.	JSC	Smith, J. V.	NGL 14-001-171	1926
13	UNIV OF CHICAGO	Harris, J. W.	JSC	Fernandez-Moran, H.	NGR 14-001-166	1933
13	UNIV OF CHICAGO	Harris, J. W.	JSC	Hafner, S. S.	NGR 14-001-173	1934
13	UNIV OF CHICAGO	Hallenbeck, D.	HQ-SG	Simpson, J. A.	NGR 14-001-188	1935
13	UNIV OF CHICAGO	Mitz, M. A.	HQ-SL	Simpson, J. A.	NGR 14-001-196	1939
13	UNIV OF CINCINNATI	Brown, G. V.	LERC	Joiner, W. C.	NGR 36-004-054	2985
13	UNIV COLORADO-BOLDR	Staff, W. O.	GSFC	Rense, W. A.	NAS 5-3931	1651
13	UNIV COLORADO-BOLDR	Meese, K. J.	GSFC	Barth, C. A.	NAS 5-9307	1652
13	UNIV COLORADO-BOLDR	Meese, K. J.	GSFC	Thomas, G. E.	NAS 5-9327	1653
13	UNIV COLORADO-BOLDR	Donley, J. L.	GSFC	Brunner, E. C.	NAS 5-11363	1654
13	UNIV COLORADO-BOLDR	Harris, J. W.	JSC	Larson, E. E.	NGR 06-003-181	1667
13	UNIV COLORADO-BOLDR	Hutchby, J. A.	LARC	Chernow, F.	NGR 06-003-205	1672
13	UNIV COLORADO-BOLDR	Kavanagh, L. D.	HQ-SG	Speiser, T. W.	NGR 06-003-092	1661
13	UNIV OF DELAWARE	Harris, J. W.	JSC	Glass, B. P.	NGR 08-001-029	1729
13	UNIV OF DENVER	Hobbs, R. W.	GSFC	Edrich, J.	NAS 5-23190	1675
13	UNIV OF DENVER	Kavanagh, L. D., Jr.	HQ-SG	Patel, V. L.	NGR 06-004-058	1682
13	UNIV OF DENVER	Kavanagh, L. D.	HQ-SG	Roederer, J. G.	NGR 06-004-060	1683
13	UNIV OF FLORIDA	Thom, K.	HQ-NS	Schneider, R. T.	NGL 10-005-089	1801
13	UNIV OF HOUSTON	Harris, J. W.	JSC	Oro, J.	NGR 44-005-127	3313
13	UNIV OF HOUSTON	Bonner, G.	JSC	Hildebrandt, A. F.	NGR 44-005-137	3316
13	UNIV OF HOUSTON	Strangway, D. W.	JSC	Vant Hull, L. L.	NGR 44-005-162	3317
13	UNIV OF HOUSTON	Soffen, G. A.	LARC	Oro, J.	NAS 1-9685	3283
13	UNIV OF IDAHO	Scott, W.	JSC	Stewart, R.	NAS 9-12078	1882
13	UNIV OF IOWA	Hall, C. F.	ARC	Van Allen, J. A.	NAS 2-5603	2026
13	UNIV OF IOWA	Hall, C. F.	ARC	Van Allen, J. A.	NAS 2-6553	2028
13	UNIV OF IOWA	Ferer, B. H.	GSFC	Frank, L. A.	NAS 5-9074	2029
13	UNIV OF IOWA	Davis, M. A.	GSFC	Frank, L. A.	NAS 5-11039	2030
13	UNIV OF IOWA	Limberis, B. R.	GSFC	Frank, L. A.	NAS 5-11064	2031
13	UNIV OF IOWA	Madden, J. S.	GSFC	Gurnett, D. A.	NAS 5-11074	2032
13	UNIV OF IOWA	Longanecker, G. W.	GSFC	Gurnett, D. A.	NAS 5-11167	2033
13	UNIV OF IOWA	Eaker, H. L.	GSFC	Frank, L. A.	NAS 5-11265	2034
13	UNIV OF IOWA	Davis, M. A.	GSFC	Gurnett, D. A.	NAS 5-11431	2036
13	UNIV OF IOWA	Coffee, C. W., Jr.	LARC	Van Allen, J. A.	NAS 1-11257	2025
13	UNIV OF IOWA	Kavanagh, L. D., Jr.	HQ-SG	Van Allen, J. A.	NGL 16-001-002	2041
13	UNIV OF IOWA	Schmerling, E. R.	HQ-SG	Montgomery, D. C.	NGL 16-001-043	2042
13	UNIV OF KENTUCKY	Harris, J. W.	JSC	Ehmann, W. D.	NGR 18-001-058	2076
13	UNIV OF KENTUCKY	Harris, J. W.	JSC	Birkebah, R. C.	NGR 18-001-060	2077
13	UNIV OF KENTUCKY	Cochran, T. H.	LERC	Lienhard, J. H.	NGR 18-001-035	2075

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13	UNIV OF MAINE-ORONO	Weinberg, I.	HQ-RW	Clark, A. H.	NGR 20-006-016	2121
13	UNIV MARYLAND-COL PK	Davis, M. A.	GSFC	Gloeckler, G.	NAS 5-11063	2147
13	UNIV MARYLAND-COL PK	Richard, H. L.	GSFC	Hochuli, U. E.	NGR 21-002-216	2166
13	UNIV MARYLAND-COL PK	Major, F. G.	GSFC	Alley, C. O.	NGR 21-002-218	2167
13	UNIV MARYLAND-COL PK	Ogilvie, K. W.	GSFC	Coplan, M. A.	NGR 21-002-291	2175
13	UNIV MARYLAND-COL PK	Teegarden, B. J.	GSFC	Gloeckler, G.	NGR 21-002-316	2181
13	UNIV MARYLAND-COL PK	Patch, R. W.	LERC	Miller, M. H.	NGL 21-002-167	2154
13	UNIV MARYLAND-COL PK	Gessow, A.	HQ-RA	Melnik, W. L.	NGR 21-002-303	2178
13	UNIV MARYLAND-COL PK	Kavanagh, L. D.	HQ-SG	Tidman, D. A.	NGL 21-002-005	2150
13	UNIV MARYLAND-COL PK	Kavanagh, L. D., Jr.	HQ-SG	Matthews, D. L.	NGR 21-002-308	2179
13	UNIV MARYLAND-COL PK	Kavanagh, L. D., Jr.	HQ-SG	Wilkerson, T. D.	NGR 21-002-311	2180
13	UNIV MARYLAND-COL PK	Strickland, A. T.	HQ-SM	Currie, D. G.	NGR 21-002-267	2172
13	UNIV MD-EASTRN SHORE	Major, F. G.	GSFC	Singh, G.	NGR 21-119-001	2199
13	UNIV OF MASS-AMHERST	Harris, J. W.	JSC	Haggerty, S. E.	NGL 22-010-089	2400
13	UNIV MICH-ANN ARBOR	Meese, K. J.	GSFC	Reber, C. A.	NAS 5-9306	2427
13	UNIV MICH-ANN ARBOR	Meese, K. J.	GSFC	Reber, C. A.	NAS 5-9328	2428
13	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Carignan, G. R.	NAS 5-11073	2429
13	UNIV MICH-ANN ARBOR	Madden, J. J.	GSFC	Haddock, F. T.	NAS 5-11174	2431
13	UNIV MICH-ANN ARBOR	Devries, L. L.	MSFC	Cicerone, R. J.	NAS 8-28294	2445
13	U MINN-MNPLS-ST PAUL	Staff, W. O.	GSFC	Epney, O.	NAS 5-3838	2494
13	U MINN-MNPLS-ST PAUL	Madden, J. J.	GSFC	Kellogg, P. J.	NAS 5-11060	2495
13	U MINN-MNPLS-ST PAUL	Longanecker, G. W.	GSFC	Cahill, L. J., Jr.	NAS 5-11173	2496
13	U MINN-MNPLS-ST PAUL	White, C. E.	GSFC	Kellogg, P. J.	NAS 5-11310	2497
13	U MINN-MNPLS-ST PAUL		GSFC		NAS 5-23273	2500
13	U MINN-MNPLS-ST PAUL	Harris, J. W.	JSC	Pepin, R. O.	NGL 24-005-225	2510
13	U MINN-MNPLS-ST PAUL	Harris, J. W.	JSC	Murthy, V. R.	NGR 24-005-223	2518
13	U MINN-MNPLS-ST PAUL	Kavanagh, L. D.	HQ-SG	Winckler, J. R.	NGL 24-005-008	2507
13	U MINN-MNPLS-ST PAUL	Kavanagh, L. D.	HQ-SG	Winckler, J. R.	NGR 24-005-111	2514
13	U MINN-MNPLS-ST PAUL	Kavanagh, L. D., Jr.	HQ-SG	Cahill, L. J.	NGR 24-005-180	2515
13	U MINN-MNPLS-ST PAUL	Kavanagh, L. D., Jr.	HQ-SG	Cahill, L. J.	NGR 24-005-253	2521
13	UNIV MO-KANSAS CITY	Lehmann, J.	HQ-ER	Querry, M. R.	NGR 26-001-012	2565
13	UNIV NEBRASKA-LINCLN	Aikin, A. C.	GSFC	Samson, J. A.	NAS 5-23054	2590
13	UNIV NEW HAMPSHIRE	Donley, J. L.	GSFC	Chupp, E. L.	NAS 5-11054	2609
13	UNIV NEW HAMPSHIRE	Kavanagh, L. D., Jr.	HQ-SG	Arnoldy, R. J.	NGR 30-002-054	2616
13	UNIV NEW HAMPSHIRE	Kavanagh, L. D., Jr.	HQ-SG	Lockwood, J. A.	NGR 30-002-074	2617
13	UNIV OF NEW MEXICO	Thole, J. M.	GSFC	Leavitt, C. P.	NAS 5-9275	2694
13	UNIV OF NEW MEXICO	Meese, K. J.	GSFC	Regener, V. H.	NAS 5-9314	2695
13	UNIV N CAR-CHPL HILL		ARC	Clark, F. C.	NGL 34-003-041	2921
13	UNIV N CAR-CHPL HILL	Parnell, T. A.	MSFC	Childs, C. B.	NAS 8-26601	2919
13	UNIV OREGON-EUGENE	Whiting, E. E.	ARC	Crasemann, B.	NGR 38-003-036	3031
13	UNIV OREGON-EUGENE	Harris, J. W.	JSC	Weill, D. F.	NGL 38-003-022	3025
13	UNIV OF PENNSYLVANIA		GSFC	Altman, M.	NGL 39-010-001	3100
13	UNIV OF PITTSBURGH	Temkin, A.	GSFC	Gerjuoy, E.	NGL 39-011-035	3107
13	UNIV OF PITTSBURGH	Harris, J. W.	JSC	Fuller, M.	NGR 39-011-129	3111
13	UNIV SAN FRANCISCO	Bailey, J. V.	JSC	Benton, E. V.	NAS 9-12466	1586
13	UNIV SAN FRANCISCO	Parnell, T. A.	MSFC	Benton, E. V.	NAS 8-26758	1585
13	UNIV OF SOUTHERN CAL	Hall, C. F.	ARC	Judge, D. L.	NAS 2-5608	1598
13	UNIV OF SOUTHERN CAL	Hall, C. F.	ARC	Judge, D. L.	NAS 2-6558	1599
13	UNIV OF SOUTHERN CAL		JSC		NAS 9-6164	1604
13	UNIV OF SOUTHERN CAL	Bannister, T. C.	MSFC	Wilcox, W. R.	NAS 8-29847	1603
13	UNIV OF SOUTHERN CAL	Kavanagh, L. D., Jr.	HQ-SG	Intriligator, D. S.	NGR 05-018-181	1615
13	UNIV OF SOUTHERN CAL	Calahan, H. D.	HQ-SG	Intriligator, D. S.	NGR 05-018-185	1616
13	UNIV TENNESSEE-KNOXV	Plotkin, H. H.	GSFC	Shofner, F. M.	NGL 43-001-056	3167
13	UNIV TENNESSEE-KNOXV	Weldon, J. M.	HQ-SG	Sellin, I. A.	NGR 43-001-114	3172
13	UNIV TEXAS-AUSTIN	Potter, A. E.	JSC	Barnes, P. G.	NAS 9-12568	3328
13	UNIV TEXAS-DALLAS	Meese, K. J.	GSFC	Hanson, W. B.	NAS 5-9311	3361
13	UNIV TEXAS-DALLAS		GSFC		NAS 5-9444	3362
13	UNIV TEXAS-DALLAS	Eichelman, W. F.	JSC	Hoffman, J. H.	NAS 9-10410	3369

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13	UNIV TEXAS-DALLAS	Harris, J. W.	JSC	Carter, J. L.	NGR 44-004-116	3377
13	UNIV TEXAS-DALLAS		HQ-SG	Reaney, R. C.	NSG 583	3384
13	UNIV TEXAS-GALVESTON	Eichelman, W. F.	JSC	Latham, G. V.	NAS 9-13143	3392
13	UNIV OF UTAH	Wasel, R. A.	HQ-RP	Williams, M. L.	NGL 45-003-029	3419
13	UNIV OF VIRGINIA	Hardee, S. N.	JSC	Junkins, J. L.	NAS 9-12752	3469
13	UNIV OF WASHINGTON	Watson, E. C.	ARC	Childs, M. F.	NGL 48-002-047	3535
13	UNIV OF WASHINGTON	Harris, J. W.	JSC	Ghose, S.	NGR 48-002-149	3550
13	UNIV OF WASHINGTON	Soffen, G. A.	LARC	Leovy, C. B.	NAS 1-9694	3527
13	UNIV OF WASHINGTON	Fleishman, M. R.	HQ-NS	Hertzberg, A.	NGL 48-002-044	3534
13	UNIV WISC-MADISON	Davis, M. A.	GSFC	Scherb, F.	NAS 5-11068	3566
13	UNIV WISC-MADISON	Thole, J. M.	GSFC	Kraushar, W. L.	NAS 5-11361	3567
13	UNIV WISC-MADISON	Kavanagh, L. D., Jr.	HQ-SG	Scherb, F.	NGR 50-002-162	3589
13	UNIV OF WYOMING	White, W. F.	LARC	Rhinehart, E. A.	NGL 51-001-010	3605
13	UNIV OF WYOMING	Hallenbeck, D. R.	HQ-SG	Hofman, D.	NGR 51-001-033	3607
13	VANDERBILT UNIVERSITY	Hohl, F.	LARC	Roos, C. E.	NGR 43-002-031	3184
13	VIRGINIA POLY INST	Zorumski, W. E.	LARC	Nayfeh, A. H.	NGR 47-004-109	3519
13	VIRGINIA POLY INST	Bercaw, R. W.	LERC	Gotow, K.	NAS 3-14873	3496
13	VIRGINIA STATE COL	Pohly, J. G.	HQ-PY	Shonoch, C. E.	NGR 47-014-006	3525
13	WASHINGTON UNIVERSITY	Harris, J. W.	JSC	Walker, R. M.	NGL 26-008-065	2580
13	WASHINGTON UNIVERSITY	Jones, J. H.	MSFC	Rodin, E. Y.	NAS 8-26084	2574
13	WASHINGTON UNIVERSITY	Kavanagh, L. D., Jr.	HQ-SG	Abraham Shraune, B.	NGL 26-008-057	2579
13	WAYNE STATE UNIV	Brandhorst, H. W.	LERC	Wang, E. Y.	NGR 23-006-057	2487
13	WAYNE STATE UNIV	Huffaker, R. M.	MSFC	Thomson, J. A.	NAS 8-24810	2485
13	WESLEYAN UNIVERSITY	Eichelman, W. F.	JSC	Faller, J. E.	NAS 9-11025	1701
13	WESLEYAN UNIVERSITY	Strickland, A. T.	HQ-SM	Faller, J. E.	NGR 07-006-008	1704
13	WICHITA STATE UNIV	Rice, E. J.	LERC	Eversman, W.	NGR 17-003-018	2070
13	YALE UNIVERSITY	Poltkin, H. H.	GSFC	Lamb, W. E.	NGR 07-004-035	1714
13	YALE UNIVERSITY	Redding, E. R.	HQ-PY	Wildt, R.	NGR 07-004-029	1712
19	CALIF INST OF TECH	Wolfe, J. H.	ARC	Intriligator, D. S.	NAS 2-6740	1180
19	CALIF INST OF TECH	Eichelman, W. F.	JSC	Scott, R. F.	NAS 9-11454	1190
19	CLEMSON UNIV-CLEMSON	Lynch, T. J.	GSFC	Helgert, H. J.	NGR 41-001-036	3139
19	COLLEGE VIRGIN ISLND	Harris, J. W.	JSC	McCord, T. B.	NGL 52-083-009	3611
19	COLLEGE OF WM & MARY	Martin, D. J.	LARC	Sher, A.	NGL 47-006-058	3433
19	COLUMBIA UNIVERSITY	Thaddeus, P.	GSFC	Woltjer, L.	NGL 33-008-012	2729
19	COLUMBIA UNIVERSITY	Smith, D. E.	GSFC	Sykes, L. R.	NGR 33-008-146	2736
19	COLUMBIA UNIVERSITY	Eichelman, W. F.	JSC	Langseth, M. G.	NAS 9-6037	2726
19	COLUMBIA UNIVERSITY	White, T. T.	JSC	Talwani, M.	NAS 9-11751	2727
19	CORNELL UNIVERSITY	Bryson, R. P.	HQ-SM	Gold, T.	NGL 33-010-005	2755
19	HOWARD UNIVERSITY	Trombka, J. I.	GSFC	Ferguson, G. A.	NGR 09-011-022	1771
19	JOHNS HOPKINS UNIV	Dubin, M.	HQ-SG	Fastie, W. G.	NGR 21-001-001	2132
19	LINFIELD COLLEGE	Smith, A. L.	LERC	Swanson, L. W.	NGR 38-010-005	3011
19	MASS INST OF TECH	Bonavito, N. L.	GSFC	Venti, J.	NAS 5-11909	2265
19	MASS INST OF TECH	Salzberg, I. M.	GSFC	Counselman, C. C., III	NAS 5-11947	2266
19	MASS INST OF TECH	Stewart, E. B.	JSC	Simmons, M. G.	NAS 9-10748	2292
19	MASS INST OF TECH.	Cubley, D.	JSC	Simmons, D. G.	NAS 9-11540	2295
19	MASS INST OF TECH	Holley, M. H.	JSC	Harper, J.	NAS 9-11555	2296
19	MASS INST OF TECH	Taylor, R. T.	LARC	Covert, E. E.	NAS 1-9812	2249
19	MASS INST OF TECH	Adams, W. R.	MSFC	Gatos, H. C.	NAS 8-28306	2281
19	MICHIGAN STATE UNIV	Kirby, R. R.	JSC	Manderscheid, L. V.	NAS 9-13332	2414
19	MORGAN STATE COLLEGE	Pohly, J. G.	HQ-PY	Proctor, N. K.	NGT 21-025-006	2144
19	NEW MEX ST U-LAS CR	Bissell, E. E.	GSFC	Lawrence, R. H.	NAS 5-23001	2688
19	NEW YORK INST TECH	Mangus, J. D.	GSFC	Stroke, G. W.	NGR 33-230-001	2801
19	NO CAROLINA STATE U	Hess, R. V.	LARC	Hassan, H. A.	NGR 34-002-115	2907
19	OHIO STATE UNIV	Smith, D. E.	GSFC	Rapp, R. H.	NGR 36-008-161	2972
19	OHIO STATE UNIV	Nance, R. L.	JSC	Mueller, I. I.	NAS 9-13093	2961
19	OHIO STATE UNIV	Murphy, J. P.	HQ-ES	Mueller, I. I.	NGL 36-008-093	2965
19	PRINCETON UNIVERSITY	Greene, E. P.	GSFC	Coffman, E. G.	NGR 31-001-170	2652
19	PRINCETON UNIVERSITY	Johnston, N. J.	LARC	Gillham, J. K.	NGR 31-001-221	2659

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19	PURDUE UNIVERSITY	Stine, H. A.	ARC	Incropera, F. P.	NGR 15-005-129	2002
19	PURDUE UNIVERSITY	Fihelly, A. W.	GSFC	Baumgardner, M. F.	NAS 5-21785	1986
19	RENSSELAER POLY-NY	Adams, W. R.	MSFC	Wiedemeier, H.	NAS 8-28307	2831
19	RICE UNIVERSITY	Eichelman, W. F.	JSC	Reasoner, D. L.	NAS 9-5884	3214
19	SO DAKOTA STATE UNIV	Kirby, R. R.	JSC	Myers, V. I.	NAS 9-13337	3150
19	STANFORD UNIVERSITY	Donaldson, R.	ARC	Angell, J. B.	NGR 05-020-543	1342
19	STANFORD UNIVERSITY	Hughes, W. E.	GSFC	King, G.	NGL 05-020-165	1305
19	STANFORD UNIVERSITY	White, T. T.	JSC	Lyon, R. J.	NAS 9-13357	1296
19	STATE U NY-STONY BRK	Hughes, W. E.	GSFC	Tuan, H. S.	NGL 33-015-066	2853
19	TEXAS A&I UNIVERSITY	Johnston, D. A.	JSC	Speed, F. M.	NGR 44-073-003	3240
19	UNIV ALA-HUNTSVILLE	Adams, W. R.	MSFC	Walter, H. U.	NAS 8-28304	1058
19	UNIV ARKANSAS-FAYETV	Ragent, B.	ARC	Testerman, M. K.	NGL 04-001-007	1173
19	UNIV CALIF-BERKELEY	Miller, M.	JSC	Mitchell, J. K.	NAS 9-11266	1391
19	UNIV CALIF-BERKELEY	Strangway, D. W.	JSC	Morrison, H. F.	NGR 05-003-447	1420
19	UNIV CALIF-BERKELEY	Roman, N. G.	HQ-SG	Tounes, C. H.	NGL 05-003-272	1401
19	UNIV CALIF-L ANGELES	Adams, W. R.	MSFC	Yue, A. S.	NAS 8-28310	1475
19	UNIV OF CHICAGO	Redding, E. R.	HQ-PY	Simpson, J. A.	NGR 14-001-224	1943
19	UNIV OF GEORGIA		MSFC		NAS 8-29939	1859
19	UNIV OF HOUSTON	White, T. T.	JSC	Hayre, H. S.	NAS 9-13462	3304
19	UNIV ILLINOIS-URBANA	Hill, R. O.	JSC	Wong, K. W.	NAS 9-12446	1951
19	UNIV ILLINOIS-URBANA		HQ-RR	Worley, W. J.	NGR 14-005-010	1957
19	UNIV ILLINOIS-URBANA	Schmerling, E. R.	HQ-SG	Bowhill, S. A.	NGR 14-005-181	1965
19	UNIV OF KANSAS	White, T. J.	JSC	Yarger, H. L.	NAS 9-13271	2053
19	UNIV OF KANSAS	Kirby, R.	JSC	Eagleman, J. R.	NAS 9-13273	2054
19	UNIV OF KANSAS	White, T. T.	JSC	Moore, R. K.	NAS 9-13331	2055
19	UNIV MARYLAND-COL PK	Smith, D. E.	GSFC	Currie, D. G.	NGR 21-002-390	2193
19	UNIV MARYLAND-COL PK	Eichelman, W. F.	JSC	Weber, J.	NAS 9-5886	2149
19	UNIV MARYLAND-COL PK	Redfield, M.	HQ-MT	Alley, C. O.	NGR 21-002-285	2174
19	UNIV SAN FRANCISCO	Tremor, J. W.	ARC	Benton, E. V.	NAS 2-7059	1584
19	UNIV OF SOUTHERN CAL	Adams, W. R.	MSFC	Wilcox, W. R.	NAS 8-28305	1602
19	UNIV TEXAS-DALLAS	Nelson, E. D.	GSFC	Heikkila, W. J.	NAS 5-9112	3360
19	UNIV TEXAS-DALLAS	Eichelman, W. F.	JSC	Johnson, J. S.	NAS 9-5964	3368
19	UNIV TEXAS-DALLAS	Eichelman, W. F.	JSC	Hoffman, J. H.	NAS 9-12074	3370
19	UNIV WISC-MADISON	Wolfe, J. H.	ARC	Scherb, F.	NAS 2-6759	3562
19	UNIV WISC-MILWAUKEE	Holmes, Q. A.	JSC	Northouse, R. A.	NAS 9-12931	3599
21	AMERICAN UNIVERSITY		HQ-RE		NASR 229	1732
21	APPALACHIAN STATE U	Falls, L. W.	MSFC	Carter, M. C.	NAS 8-29286	2884
21	AUBURN UNIV-AUBURN		JSC	Fitzpatrick, P. M.	NGR 01-003-036	1025
21	BOWIE STATE COLLEGE		GSFC		NAS 5-21418	2122
21	BOWIE STATE COLLEGE	Bremer, H. O.	GSFC	Bannister, P. J.	NAS 5-22066	2123
21	BOWIE STATE COLLEGE	Pohly, J. G.	HQ-PY	Srivastava, S.	NGR 21-027-004	2125
21	BOWIE STATE COLLEGE		HQ-PY		NGT 21-027-009	2127
21	BROWN UNIVERSITY	Doolin, B. F.	ARC	Lasalle, J. P.	NGL 40-002-015	3122
21	CAL STATE U-FULLERTN	Velez, C. E.	GSFC	Pierce, S.	NGR 05-071-005	1242
21	CLEMSON UNIV-CLEMSON	Ballard, T. B.	LARC	Snelsire, R. W.	NGR 41-001-024	3136
21	FEDERAL CITY COLLEGE	Alterescu, S.	GSFC	Schwarz, R. A.	NGR 09-050-013	1748
21	GEORGIA INST OF TECH	Leybold, H. A.	LARC	Hanagud, S. V.	NGR 11-002-169	1853
21	HARVARD UNIVERSITY	Rosenfeld, S. A.	HQ-RE	Book, R. V.	NGR 22-007-176	2235
21	IOWA STATE UNIV	Rakich, J. V.	ARC	Tannehill, J. C.	NGR 16-002-038	2022
21	LEHIGH UNIVERSITY	Illg, W.	LARC	Erdogan, F.	NGR 39-007-011	3055
21	MASS INST OF TECH	Jones, M. E.	JSC	Ragan, R.	NAS 9-6823	2287
21	MASS INST OF TECH	Rosenfeld, S. A.	HQ-RE	Phillips, N.	NASW 2276	2303
21	NO CAROLINA STATE U	Armstrong, E. S.	LARC	Sagan, H.	NGL 34-002-032	2900
21	NO CAROLINA STATE U	Turner, R. E.	LARC	Moore, C. J.	NGR 34-002-184	2913
21	PROVIDENCE COLLEGE		HQ-ER	Gora, E. K.	NGR 40-005-002	3131
21	RICE UNIVERSITY	Baker, K.	JSC	Lynn, S.	NAS 9-12776	3218
21	SOUTHERN METHODIST U		HQ-RW	Walsh, J. E.	NGR 44-007-028	3235
21	STANFORD UNIVERSITY	Rosenfeld, S. A.	ARC	McCarthy, J.	NSR 05-020-500	1371

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21	SYRACUSE UNIVERSITY	Creveling, C. J.	GSFC	Foster, G. H.	NGR 33-022-125	2874
21	SYRACUSE UNIVERSITY	Pease, P. B.	GSFC	Foster, G. H.	NGR 33-022-150	2876
21	TEXAS A&M UNIVERSITY	Damon, E. P.	GSFC	Simmons, D. B.	NAS 5-11911	3242
21	TEXAS A&M UNIVERSITY	Damon, E. P.	GSFC	Simmons, D. B.	NAS 5-11988	3243
21	TEXAS TECH UNIV	MacDonald, R. B.	JSC	Odell, P. L.	NAS 9-12775	3277
21	TEXAS TECH UNIV	Eandi, B. K.	JSC	Coherty, W. A.	NGR 44-011-050	3278
21	UNIV ALA-HUNTSVILLE	Ruff, R. C.	MSFC	Todd, F. C.	NAS 8-26773	1045
21	UNIV ALA-HUNTSVILLE	Zimmerman, C. R.	MSFC	Chung, T. J.	NAS 8-27792	1051
21	UNIV CALIF-SAN DIEGO	Smith, M. C.	ARC		NAS 2-6916	1525
21	UNIV OF CHICAGO		ARC	Greene, P. H.	NGR 14-001-199	1940
21	UNIV OF DELAWARE		HQ-RA	Pellicciaro, E. J.	NGR 08-001-016	1728
21	UNIV OF GEORGIA	Rosenfeld, S. A.	HQ-RA	Adomian, G.	NGR 11-003-020	1861
21	UNIV OF HAWAII	Morakis, J.	GSFC	Peterson, W. W.	NGL 12-001-046	1872
21	UNIV OF HOUSTON	Baker, K.	JSC	Decell, H.	NAS 9-12777	3298
21	UNIV OF HOUSTON	Glynn, P. C.	JSC	Michalopoulos, C. D.	NGR 44-005-120	3311
21	UNIV ILLINOIS-URBANA		ARC		AF306 24144	1950
21	UNIV OF KANSAS	Harmon, T. J.	WS	Haralick, R. M.	NAS 6-1967	2050
21	UNIV MARYLAND-COL PK	Grunby, E. I.	GSFC	Chu, Y.	NGR 21-002-197	2163
21	UNIV MARYLAND-COL PK	Greene, E. P.	GSFC	Chu, Y.	NGR 21-002-206	2165
21	UNIV MARYLAND-COL PK	Pontious, C. E.	HQ-RE	Miller, J.	NGR 21-002-270	2173
21	UNIV MICH-ANN ARBOR	Inghan, H. L.	MSFC	Powers, W. F.	NAS 8-26929	2444
21	UNIV MO-COLUMBIA	Dawson, C. T.	JSC	Tranter, W. H.	NAS 9-13436	2556
21	UNIV TEXAS-AUSTIN	Velez, C. E.	GSFC	Nacozy, P. E.	NGR 44-012-255	3350
21	UNIV TEXAS-AUSTIN	Fehlberg, E.	MSFC	Tapley, B. D.	NAS 8-27931	3323
21	UNIV TEXAS-DALLAS	Baker, K.	JSC	Odell, P. L.	NAS 9-13512	3372
21	UNIV OF UTAH	Foreman, R. G.	JSC	Folias, E. S.	NGR 45-003-093	3423
21	UNIV OF VIRGINIA	Dow, M. B.	LARC	Mann, J. E.	NGR 47-005-179	3482
21	UNIV WISC-MADISON	Rosenfeld, S. A.	ARC	Parmentier, R. D.	NGR 50-002-160	3588
21	VANDERBILT UNIVERSITY	King, C. A.	MSFC	Bradshaw, C.	NAS 8-28764	3181
21	VIRGINIA STATE COL		HQ-PY		NGL 47-014-009	3522
31	BOSTON COLLEGE	Haughney, L. C.	ARC	Eather, R. H.	NGR 22-003-027	2205
31	BROWN UNIVERSITY	Soffen, G. A.	LARC	Mutch, T. A.	NAS 1-9680	3121
31	CALIF INST OF TECH	Eichelman, W. F.	JSC	Burnett, D. S.	NAS 9-12585	1192
31	CALIF INST OF TECH	Dwornik, S. E.	HQ-SL	Murray, B. C.	NGR 05-002-117	1212
31	CAL STATE U-S DIEGO		GSFC		NAS 5-23249	1250
31	CAL STATE U-SAN JOSE	Gloria, H. R.	ARC	Miller, A.	NAS 2-7616	1252
31	CAL STATE U-SAN JOSE	Whitten, R. C.	ARC	Miller, A.	NGR 05-046-020	1256
31	COLORADO STATE UNIV	Solomonson, V. V.	GSFC	Reiter, E. R.	NGR 06-002-098	1640
31	COLORADO STATE UNIV	Wexler, R.	GSFC	Vonder Haar, T. H.	NGR 06-002-102	1641
31	COLORADO STATE UNIV	Dragg, J.	JSC	Smith, J.	NAS 9-12972	1634
31	COLORADO STATE UNIV	Sweet, G. E.	LARC	Vonder Haar, T. H.	NAS 1-12106	1624
31	COLUMBIA UNIVERSITY	Eichleman, W. F.	JSC	Latham, G. H.	NAS 9-5957	2725
31	COLUMBIA UNIVERSITY	Neuschafer, R. W.	MSFC	Angel, J. R.	NAS 8-29703	2724
31	CORNELL UNIVERSITY	Conrath, B. J.	GSFC	Gierasch, P. J.	NAS 5-23236	2749
31	CORNELL UNIVERSITY	Pearce, F.	JSC	Gold, T.	NAS 9-10657	2750
31	CORNELL UNIVERSITY	Fellows, R. F.	HQ-SL	Sagan, C.	NGL 33-010-082	2761
31	CORNELL UNIVERSITY		HQ-SL		NGL 33-010-186	2763
31	DARTMOUTH COLLEGE	Schmerling, E. R.	HQ-SG	Morgan, M. G.	NGR 30-001-030	2605
31	DARTMOUTH COLLEGE	Schmerling, E. R.	HQ-SG	Laaspere, T.	NGR 30-001-041	2607
31	DREXEL UNIVERSITY	Sweet, G. E.	LARC	House, F. B.	NAS 1-11871	3044
31	DUDLEY OBSERVATORY	Levin, R. R.	JSC	Greenberg, J. M.	NAS 9-12539	2786
31	FAIRFIELD UNIVERSITY	Heath, D. F.	GSFC	McElaney, J. H.	NGR 07-010-002	1690
31	FLORIDA STATE UNIV	Soffen, G. A.	LARC	Hess, S. K.	NAS 1-9693	1779
31	GEORGIA INST OF TECH	Fellows, R. F.	HQ-SL	Edwards, H. D.	NGL 11-002-004	1840
31	GRAMBLING COLLEGE	Pohly, J. G.	HQ-PY	Gajendar, N.	NGR 19-011-013	2084
31	HARVARD UNIVERSITY		GSFC		NAS 5-23199	2220
31	HARVARD UNIVERSITY	Soffen, G. A.	LARC	McElroy, M. B.	NAS 1-10492	2217
31	HARVARD UNIVERSITY	Fellows, R. F.	HQ-SL	Goody, R. M.	NGL 22-007-228	2229

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31	HARVARD UNIVERSITY	Fellows, R. F.	HQ-SL	Goody, R. M.	NGR 22-007-240	22
31	HARVARD UNIVERSITY	Fellows, R. F.	HQ-SL	Goody, R. M.	NGR 22-007-242	22
31	JOHNS HOPKINS UNIV	Findlay, J. A.	GSFC	Doering, J. P.	NAS 5-11415	21
31	KANSAS STATE UNIV	Fellows, R. F.	HQ-SL	Williams, G.	NGL 17-001-026	20
31	MASS INST OF TECH		GSFC		NAS 5-11082	22
31	MASS INST OF TECH	Wilheit, T. T.	GSFC	Barrett, A. H.	NGR 22-009-421	23
31	MASS INST OF TECH	Jastrow, R.	GSFC	Lorenz, E.	NGR 22-009-727	23
31	MASS INST OF TECH	Eichelman, W. F.	JSC	Toksoz, M. N.	NAS 9-12334	22
31	MASS INST OF TECH	Howell, J. Q.	LARC	Staelin, D. H.	NAS 1-10693	22
31	MASS INST OF TECH	Dodgen, J. A.	LARC	Phillips, N. A.	NAS 1-11092	22
31	MASS INST OF TECH	Beyerle, F. J.	MSFC	Sinskey, A. J.	NAS 8-28411	22
31	MASS INST OF TECH	Roman, N. G.	HQ-SG	Shapiro, I. I.	NGR 22-009-366	23
31	MASS INST OF TECH	Fellows, R. F.	HQ-SL	Lewis, J. S.	NGL 22-009-521	23
31	MASS INST OF TECH	Harnett, D. J.	HQ-SL	Crowston, W. B.	NGR 22-009-619	23
31	MASS INST OF TECH	Fellows, R. F.	HQ-SL	Pettengill, G. H.	NGR 22-009-693	23
31	MASS INST OF TECH	Fellows, R. F.	HQ-SL	Shapiro, I. I.	NGR 22-009-694	23
31	NEW YORK UNIVERSITY	Ostrow, H.	GSFC	Schotland, R. M.	NAS 5-21666	28
31	NEW YORK UNIVERSITY	Halem, M.	GSFC	Schaeffer, O. A.	NGL 33-016-013	28
31	NEW YORK UNIVERSITY	Halem, M.	GSFC	Spar, J.	NGR 33-016-174	28
31	NEW YORK UNIVERSITY	Freeman, R. S.	LARC	Korer, S. A.	NAS 1-10282	28
31	OLD DOMINION UNIV	Hulten, W. C.	LARC	Harris, F. S.	NGR 47-003-068	31
31	OREGON STATE UNIV	Reichle, H. G., Jr.	LARC	Olsson, L. E.	NGR 38-002-048	30
31	PENNSYLVANIA STATE U	Fichtl, G.	MSFC	Blackadar, A. K.	NAS 8-21140	30
31	PENNSYLVANIA STATE U	Fichtl, G. H.	MSFC		NAS 8-27334	30
31	PENNSYLVANIA STATE U	Schmerling, E. R.	HQ-SG	Nisbet, J. S.	NGL 39-009-003	30
31	PENNSYLVANIA STATE U	Schmerling, E. R.	HQ-SG	Kendall, R. F.	NGL 39-009-032	30
31	PENNSYLVANIA STATE U	Schmerling, E. R.	HQ-SG	Hale, L. C.	NGR 39-009-218	30
31	POLY INST BROOKLYN	Schmerling, E. R.	HQ-SG	Gross, A. H.	NGR 33-006-047	28
31	POLY INST BROOKLYN	Fellows, R. F.	HQ-SL	Gross, S. H.	NGR 33-006-068	28
31	RENSSELAER POLY-NY	Grant, T. L.	ARC	Modestino, J. W.	NGR 33-018-188	28
31	RENSSELAER POLY-NY	Fellows, R. F.	HQ-SL	Harteck, P.	NGL 33-018-007	28
31	ST LOUIS UNIVERSITY	Tolefson, H. B.	LARC	Pallmann, A. J.	NGL 26-006-016	25
31	STANFORD UNIVERSITY	Grant, T.	ARC	Von Eshleman, V. R.	NAS 2-7126	12
31	STANFORD UNIVERSITY	Schmerling, E. R.	HQ-SG	Crawford, F. W.	NGL 05-020-176	13
31	STANFORD UNIVERSITY	Schmerling, E. R.	HQ-SG	Darosa, A. V.	NGR 05-020-001	13
31	STANFORD UNIVERSITY	Schmerling, E. R.	HQ-SG	Helliwell, R. A.	NGR 05-020-288	13
31	STANFORD UNIVERSITY	Fellows, R. F.	HQ-SL	Von Eshleman, V. R.	NGL 05-020-014	13
31	STANFORD UNIVERSITY	Mitz, M. A.	HQ-SL	Tyler, G. L.	NGR 05-020-529	13
31	STATE U NY-STONY BRK	Fellows, R. F.	HQ-SL	Varanasi, P.	NGR 33-015-139	28
31	STATE U NY-STONY BRK		HQ-SL		NGR 33-015-169	20
31	TEXAS A&M UNIVERSITY	Ehernberger, L. J.	FRC	Scoggins, J. R.	NGR 44-001-081	32
31	TEXAS A&M UNIVERSITY	Vaughn, W. W.	MSFC	Scoggins, J. R.	NAS 8-26751	32
31	TEXAS A&M UNIVERSITY	Fichtl, G. H.	MSFC	Brundidge, K. C.	NAS 8-29582	32
31	TEXAS A&M UNIVERSITY	Fellows, R. F.	HQ-SL	Plass, G. M.	NGR 44-001-117	32
31	UNIV ALASKA-FAIRBNKS	Haughney, L. C.	ARC	Akasofu, S. I.	NGR 02-001-093	11
31	UNIV ALASKA-FAIRBNKS	Haughney, L. C.	ARC	Sivjee, G. G.	NGR 02-001-099	11
31	UNIV ALASKA-FAIRBNKS	Stolarik, J. D.	GSFC	Wescott, E. M.	NAS 5-23085	10
31	UNIV ALASKA-FAIRBNKS	Gray, J. W.	WS	Davis, T. N.	NAS 6-1932	10
31	UNIV ALASKA-FAIRBNKS	Dubin, M.	HQ-SG	Wescott, E. M.	NGR 02-001-088	11
31	UNIV ALASKA-FAIRBNKS	Dubin, M.	HQ-SG	Romick, G. J.	NGR 02-001-094	11
31	UNIV OF ARIZONA	Hovis, W. A.	GSFC	Coffeen, D. L.	NAS 5-21661	11
31	UNIV OF ARIZONA	Curran, R. J.	GSFC	Herman, B. M.	NGR 03-002-155	11
31	UNIV OF ARIZONA	Brunk, W. E.	HQ-SL	Gehrels, A. M.	NASR 138	11
31	UNIV OF ARIZONA	Fellows, R. F.	HQ-SL	Hoenig, S. A.	NGL 03-002-019	11
31	UNIV OF AUCKLAND	Schmerling, E. R.	HQ-SG	Titheridge, J. E.	NGR 52-001-001	36
31	UNIV CALIF-BERKELEY	Craddock, W.	JSC	Alvarez, L. W.	NAS 9-7801	12
31	UNIV CALIF-BERKELEY	Neuschafer, R. W.	MSFC	Alvarez, L.	NAS 8-29704	12
31	UNIV CALIF-BERKELEY	Dubin, M.	HQ-SG	Cunningham, L. E.	NGR 05-003-309	14

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31	UNIV CALIF-BERKELEY	Dubin, M.	HQ-SG	Mozer, F. S.	NGR 05-003-445	1419
31	UNIV CALIF-BERKELEY	Fellows, R. F.	HQ-SL	Pimental, G. C.	NGL 05-003-286	1402
31	UNIV CALIF-DAVIS	Wrigley, R. C.	ARC	Goldman, C. R.	NAS 2-7516	1451
31	UNIV CALIF-L ANGELES	Bandeen, W. R.	GSFC	Mintz, Y.	NGR 05-007-091	1495
31	UNIV CALIF-L ANGELES	Halem, M.	GSFC	Mintz, Y.	NGR 05-007-328	1509
31	UNIV CALIF-L ANGELES	Kopia, L. P.	LARC	Sekera, Z.	NAS 1-10107	1465
31	UNIV CALIF-L ANGELES	Kavanagh, L. D., Jr.	HQ-SG	Holzer, R. E.	NGR 05-007-276	1499
31	UNIV CALIF-L ANGELES	Fellows, R. F.	HQ-SL	Russell, C. T.	NGR 05-007-359	1515
31	UNIV CALIF-RIVERSIDE	Reichle, H. G.	LARC	Behar, J. V.	NAS 1-10373	1518
31	UNIV CALIF-SAN DIEGO	Wainscott, F. W., II	GSFC	McIlwain, C. E.	NAS 5-10363	1526
31	UNIV CALIF-SAN DIEGO	Wales, R.	GSFC	McIlwain, C. E.	NAS 5-10364	1527
31	UNIV CALIF-SAN DIEGO	Wales, R. O.	GSFC	McIlwain, C. E.	NAS 5-21055	1530
31	UNIV CALIF-SAN DIEGO	Schmerling, E. R.	HQ-SG	Fejer, J. A.	NGR 05-009-076	1552
31	UNIV OF CHICAGO	Shenk, W. E.	GSFC	Fujita, T. T.	NGR 14-001-008	1928
31	UNIV OF CHICAGO	Theon, J. S.	GSFC	Lindzen, R. S.	NGR 14-001-193	1937
31	UNIV OF CHICAGO	Fellows, R. F.	HQ-SL	Knollenberg, R. G.	NGR 14-001-148	1931
31	UNIV OF CHICAGO	Fellows, R. F.	HQ-SL	Kaplan, L. D.	NGR 14-001-194	1938
31	UNIV OF CHILE	Christie, C. J.	GSFC	Detigny, E.	NAS 5-1925	3616
31	UNIV COLORADO-BOLDR	Findlay, J. A.	GSFC	Barth, C. A.	NAS 5-11405	1655
31	UNIV COLORADO-BOLDR	Spiers, R. B.	LARC	Barth, C. A.	NAS 1-10388	1649
31	UNIV COLORADO-BOLDR	Dubin, M.	HQ-SG	Barth, C. A.	NGL 06-003-064	1658
31	UNIV COLORADO-BOLDR	Fellows, R. F.	HQ-SL	Barth, C. A.	NGL 06-003-052	1656
31	UNIV COLORADO-BOLDR	Fellows, R. F.	HQ-SL	Barth, C. A.	NGR 06-003-127	1662
31	UNIV COLORADO-BOLDR	Mitz, M. A.	HQ-SL	Lillie, C. F.	NGR 06-003-184	1668
31	UNIV COLORADO-BOLDR	Fellows, R. F.	HQ-SL	Thomas, G. E.	NGR 06-003-201	1671
31	UNIV OF DAYTON	Smith, R. E.	MSFC	Engler, N. A.	NAS 8-28231	2995
31	UNIV OF DENVER	Russell, J. M., III	LARC	Murcray, D. G.	NGR 06-004-128	1687
31	UNIV OF FLORIDA	Toft, P. D.	KSC	Uman, M. A.	NGR 10-005-169	1804
31	UNIV OF FLORIDA	Fellows, R. F.	HQ-SL	Green, A. S.	NGL 10-005-008	1796
31	UNIV OF HOUSTON	Schmerling, E. R.	HQ-SG	Sheldon, W. R.	NGR 44-005-133	3315
31	UNIV ILLINOIS-URBANA	Schmerling, E. R.	HQ-SG	Yen, K. C.	NGR 14-005-002	1955
31	UNIV ILLINOIS-URBANA	Schmerling, E. R.	HQ-SG	Bowhill, S. A.	NGR 14-005-013	1958
31	UNIV OF KANSAS	Eichelman, W. F.	JSC	Moore, R. K.	NAS 9-12061	2052
31	UNIV OF KANSAS	Lawrence, J. D.	LARC	Zeller, E. J.	NGR 17-002-089	2064
31	UNIV MARYLAND-COL PK	Abid, G. E.	GSFC	Laster, H.	NGL 21-002-033	2153
31	UNIV MARYLAND-COL PK	Brace, L. H.	GSFC	Matthews, D. L.	NGR 21-002-096	2162
31	UNIV MARYLAND-COL PK	Arking, A.	GSFC	Rosenfeld, A.	NGR 21-002-378	2192
31	UNIV MARYLAND-COL PK	Dubin, M.	HQ-SG	Poultney, S. K.	NGR 21-002-219	2168
31	UNIV MARYLAND-COL PK	Bryson, R. P.	HQ-SM	Pai, S. I.	NGR 21-002-296	2176
31	UNIV MD-EASTRN SHORE	Pohly, J. G.	HQ-PY	Singh, G.	NGR 21-119-003	2201
31	UNIV MICH-ANN ARBOR	Niemann, H. B.	GSFC	Carignan, G. R.	NAS 5-11128	2430
31	UNIV MICH-ANN ARBOR	Pelz, D. T.	GSFC	Carignan, G. R.	NAS 5-11376	2433
31	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Hays, P.	NAS 5-11380	2434
31	UNIV MICH-ANN ARBOR	Spencer, N. W.	GSFC	Carignan, G. B.	NAS 5-21038	2435
31	UNIV MICH-ANN ARBOR	Wright, D. U., Jr.	GSFC	Horvath, R.	NAS 5-21147	2436
31	UNIV MICH-ANN ARBOR	Theon, J. S.	GSFC	Mason, C. J.	NAS 5-21914	2437
31	UNIV MICH-ANN ARBOR	Findlay, J. A.	GSFC	Hays, P. M.	NAS 5-23006	2438
31	UNIV MICH-ANN ARBOR	Wexler, R.	GSFC	Bartman, F. L.	NSR 23-005-376	2483
31	UNIV MICH-ANN ARBOR	Eandi, B. K.	JSC	Stolarski, R. S.	NGR 23-005-559	2476
31	UNIV MICH-ANN ARBOR	Reichle, H. G.	LARC	Hays, P. B.	NAS 1-9958	2424
31	UNIV MICH-ANN ARBOR	Russell, J. M., III	LARC	Bartman, F. L.	NGR 23-005-470	2464
31	UNIV MICH-ANN ARBOR	Russell, J. M., III	LARC	Bartman, F. L.	NGR 23-005-538	2471
31	UNIV MICH-ANN ARBOR	Smith, R. E.	MSFC	Carignan, G. R.	NAS 8-21086	2443
31	UNIV MICH-ANN ARBOR	Roberts, W. T.	MSFC	Samir, U.	NGR 23-005-151	2455
31	UNIV MICH-ANN ARBOR	Schmerling, E. R.	HQ-SG	Nagy, A. F.	NGR 23-005-015	2453
31	UNIV MICH-ANN ARBOR	Schmerling, E. R.	HQ-SG	Samir, U.	NGR 23-005-320	2458
31	UNIV MICH-ANN ARBOR	Dubin, M.	HQ-SG	Hays, P. B.	NGR 23-005-360	2459
31	UNIV MICH-ANN ARBOR	Dubin, M.	HQ-SG	Bartman, F. L.	NGR 23-005-540	2472

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31	UNIV MICH-ANN ARBOR	Fellows, R. F.	HQ-SL	Liu, V. C.	NGR 23-005-094	2454
31	UNIV MICH-ANN ARBOR	Fellows, R. F.	HQ-SL	Nagy, A. F.	NGR 23-005-548	2474
31	UNIV MICH-ANN ARBOR	Fellows, R. F.	HQ-SL	Carignan, G. R.	NGR 23-005-561	2477
31	U MINN-MNPLS-ST PAUL	Findlay, J. A.	GSFC	Nier, A. O.	NAS 5-11438	2498
31	U MINN-MNPLS-ST PAUL	Trichel, M. C.	JSC	Kellogg, P. J.	NAS 9-11367	2503
31	U MINN-MNPLS-ST PAUL	Hudson, R. D.	JSC	Nier, A. O.	NGR 24-005-231	2519
31	U MINN-MNPLS-ST PAUL	Soffen, G. A.	LARC	Nier, A. O.	NAS 1-9697	2490
31	U MINN-MNPLS-ST PAUL	Melfi, L. T.	LARC	Nier, A. O.	NAS 1-10511	2491
31	U MINN-MNPLS-ST PAUL	Melfi, L. T.	LARC	Nier, A. O.	NAS 1-11676	2492
31	U MINN-MNPLS-ST PAUL	Fellows, R. F.	HQ-SL	Nier, A. O.	NGL 24-005-009	2508
31	UNIV OF MUNICH		HQ-ER	Moller, F.	NSG 305	3629
31	UNIV NEBRASKA-LINCLN	Fellows, R. F.	HQ-SL	Samson, J. A.	NGR 28-004-021	2595
31	UNIV NEW BRUNSWICK	Reichle, H. G., Jr.	LARC	Young, C.	NGR 52-163-001	3614
31	UNIV NEW HAMPSHIRE	Schmerling, E. R.	HQ-SG	Lockwood, J. A.	NGR 30-002-088	2619
31	UNIV OKLAHOMA-NORMAN	Pitts, D. E.	JSC	Sasaki, Y.	NAS 9-13360	3008
31	UNIV OKLAHOMA-NORMAN	Turner, R. E.	MSFC	Inman, R. L.	NAS 8-28659	3006
31	UNIV OREGON-EUGENE	Cameron, R. M.	ARC	Donnelly, R. J.	NGR 38-003-034	3029
31	UNIV OF OSLO	Theon, J. S.	GSFC	Hesstvedt, E.	NGR 52-155-002	3625
31	UNIV OF PITTSBURGH	Dubin, M.	HQ-SG	Donahue, T. M.	NGR 39-011-113	3110
31	UNIV OF PITTSBURGH	Fellows, R. F.	HQ-SL	Fite, W. L.	NGL 39-011-013	3105
31	UNIV OF PITTSBURGH	Fellows, R. F.	HQ-SL	Zipf, E. C.	NGL 39-011-030	3106
31	UNIV OF PITTSBURGH	Fellows, R. F.	HQ-SL	Biondi, M. A.	NGR 39-011-137	3112
31	UNIV OF SO CAROLINA	Fellows, R. F.	HQ-SL	Durig, J. R.	NGL 41-002-003	3143
31	UNIV OF SOUTHERN CAL	Fellows, R. F.	HQ-SL	Judge, D. L.	NGR 05-018-138	1611
31	UNIV OF SOUTHERN CAL	Fellows, R. F.	HQ-SL	Maxworthy, T.	NGR 05-018-178	1613
31	UNIV OF SOUTHERN CAL	Fellows, R. F.	HQ-SL	Judge, D. L.	NGR 05-018-180	1614
31	UNIV TENNESSEE-KNOXV	Ensor, G.	GSFC	Rehder, J. B.	NAS 5-21726	3155
31	UNIV TENNESSEE-KNOXV	Fellows, R. F.	HQ-SL	Gailer, N. M.	NGL 43-001-006	3165
31	UNIV TEXAS-DALLAS	Jackson, J. E.	GSFC	Hoffman, J. H.	NAS 5-11003	3363
31	UNIV TEXAS-DALLAS	Jackson, J. E.	GSFC	Heikkila, W. J.	NAS 5-11011	3364
31	UNIV TEXAS-DALLAS	Findlay, J. A.	GSFC	Hoffman, J. H.	NAS 5-11406	3365
31	UNIV TEXAS-DALLAS	Findlay, J. A.	GSFC	Hanson, W. B.	NAS 5-11407	3366
31	UNIV TEXAS-DALLAS	Golden, T. S.	GSFC	McClure, J. P.	NAS 5-23184	3367
31	UNIV TEXAS-DALLAS	Soffen, G. A.	LARC	Hanson, W. B.	NAS 1-9699	3358
31	UNIV TEXAS-DALLAS	Schmerling, E. R.	HQ-SG	Heikkila, W. J.	NGR 44-004-030	3376
31	UNIV TEXAS-DALLAS	Schmerling, E. R.	HQ-SG	Hanson, W. B.	NGR 44-004-120	3379
31	UNIV TEXAS-DALLAS	Schmerling, E. R.	HQ-SG	Heikkila, W. J.	NGR 44-004-124	3381
31	UNIV TEXAS-DALLAS	Schmerling, E. R.	HQ-SG	Heikkila, W. J.	NGR 44-004-150	3383
31	UNIV TEXAS-DALLAS	Fellows, R. F.	HQ-SL	Johnson, F. S.	NGL 44-004-001	3373
31	UNIV TEXAS-DALLAS	Fellows, R. F.	HQ-SL	Johnson, F. S.	NGL 44-004-026	3374
31	UNIV OF UTAH	Lafferty, P.	JSC	Ward, S. H.	NAS 9-11475	3414
31	UNIV OF UTAH	Henry, R. M.	LARC	Staffanson, F. L.	NGL 45-003-025	3418
31	UNIV OF UTAH	Spurling, J. F.	WS	Staffanson, F. L.	NAS 6-1908	3413
31	UNIV OF WASHINGTON	Pollack, J. B.	ARC	Leovy, C. B.	NGR 48-002-161	3552
31	UNIV OF WASHINGTON	Treon, J. S.	GSFC	Leovy, C. B.	NGR 48-002-125	3541
31	UNIV OF WASHINGTON	Fellows, R. F.	HQ-SL	Leovy, C. B.	NGR 48-002-073	3537
31	UNIV WISC-MADISON	Nordberg, W.	GSFC	Suomi, V. E.	NAS 5-11542	3568
31	UNIV WISC-MADISON	Bandeem, W. R.	GSFC	Suomi, V. E.	NAS 5-21607	3569
31	UNIV WISC-MADISON	Bandeem, W. R.	GSFC	Suomi, V. E.	NAS 5-21650	3570
31	UNIV WISC-MADISON	Greaves, J. R.	GSFC	Erickson, R. W.	NAS 5-21794	3572
31	UNIV WISC-MADISON	Bandeem, W. R.	GSFC	Suomi, V. E.	NAS 5-21798	3573
31	UNIV WISC-MADISON	Halem, M.	GSFC	Suomi, V. E.	NGR 50-002-215	3598
31	UNIV WISC-MADISON	Fellows, R. F.	HQ-SL	Weinman, J. A.	NGR 50-002-140	3587
31	UNIV WISC-MADISON	Mitz, M. A.	HQ-SL	Suomi, V. E.	NGR 50-002-170	3591
31	UNIV WISC-MADISON	Fellows, R. F.	HQ-SL	Suomi, V. E.	NGR 50-002-189	3594
31	UNIV WISC-MADISON	Fellows, R. F.	HQ-SL	Weinman, J. A.	NGR 50-002-199	3596
31	UNIV OF WYOMING	Mason, R. H.	ARC	Hackwell, J. A.	NGR 51-001-036	3609
31	UNIV OF WYOMING	Thole, J. M.	GSFC	Pepin, T. J.	NAS 5-23028	3603

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31	UNIV OF WYOMING	Hulten, W. C.	LARC	Rosen, J. M.	NGR 51-001-028	3606
31	UNIV OF WYOMING	Hulten, W. C.	LARC	Rosen, J. M.	NGR 51-001-045	3610
31	VIRGINIA POLY INST	Byvik, C. E.	LARC	Wightman, J. P.	NAS 1-10646	3495
31	WASHINGTON UNIVERSTY	Eichelman, W. F.	JSC	Walker, R. M.	NAS 9-11895	2577
31	YALE UNIVERSITY	Findlay, J. A.	GSFC	Walker, J. W.	NAS 5-23004	1705
31	YALE UNIVERSITY	Schmerling, E. R.	HQ-SG	Walker, J. C.	NGR 07-004-109	1716
31	YALE UNIVERSITY	Fellows, R. F.	HQ-SL	Cross, R. J., Jr.	NGL 07-004-043	1708
32	ARIZONA STATE UNIV	Bryson, R. P.	HQ-SM	Moore, C. B.	NGL 03-001-001	1110
32	BOSTON COLLEGE	Haughney, L. C.	ARC	Eather, R. H.	NGR 22-003-018	2203
32	BOSTON UNIVERSITY	Young, R. S.	HQ-SL	Margulis, L.	NGR 22-004-025	2211
32	BOSTON UNIVERSITY	Bryson, R. P.	HQ-SM	Brewer, T.	NGR 22-004-027	2212
32	BROWN UNIVERSITY	Harris, J. W.	JSC	Rutherford, M. J.	NGR 40-002-123	3130
32	BROWN UNIVERSITY	Dwornik, S. E.	HQ-SL	Mutch, T. A.	NGR 40-002-088	3126
32	BROWN UNIVERSITY	Allingham, J. W.	HQ-SL	Mutch, T. A.	NGR 40-002-112	3128
32	BROWN UNIVERSITY	Bryson, R. P.	HQ-SM	Head, J. W.	NGR 40-002-116	3129
32	CALIF INST OF TECH	Bates, J. R.	JSC	Silver, L. T.	NGR 05-002-159	1217
32	CALIF INST OF TECH	Harris, J. W.	JSC	Ahrens, T. J.	NGR 05-002-307	1233
32	CALIF INST OF TECH	Soffen, G. A.	LARC	Anderson, D. L.	NAS 1-9703	1176
32	CALIF INST OF TECH	Dwornik, S. E.	HQ-SL	Murray, B. C.	NGR 05-002-156	1215
32	CALIF INST OF TECH	Dwornik, S. E.	HQ-SL	Leighton, R. B.	NGR 05-002-181	1219
32	CALIF INST OF TECH	Mitz, M. A.	HQ-SL	Murray, B. C.	NGR 05-002-230	1224
32	CALIF INST OF TECH	Dwornik, S. E.	HQ-SL	Anderson, D. L.	NGR 05-002-249	1226
32	CALIF INST OF TECH	Dwornik, S. E.	HQ-SL	Shoemaker, E. M.	NGR 05-002-302	1232
32	CALIF INST OF TECH	Dwornik, S. E.	HQ-SL	Anderson, D. L.	NGR 05-002-316	1236
32	CALIF INST OF TECH	Bryson, R. P.	HQ-SM	Anderson, D. L.	NGL 05-002-069	1199
32	CALIF INST OF TECH	Bryson, R. P.	HQ-SM	Ahrens, T. J.	NGL 05-002-105	1201
32	CALIF INST OF TECH	Bryson, R. P.	HQ-SM	Ingersoll, A. P.	NGR 05-002-158	1216
32	CAL STATE U-LG BEACH	Bryson, R. P.	HQ-SM	Green, J.	NGR 05-013-023	1246
32	COLLEGE VIRGIN ISLND	Bryson, R. P.	HQ-SM	Adams, J. B.	NGR 52-083-003	3612
32	COLORADO SCH OF MINE	Stonesifer, G. R.	GSFC	Reeves, R. G.	NAS 5-21778	1620
32	COLORADO SCH OF MINE	Miller, M.	JSC	Lee, K.	NAS 9-13394	1622
32	COLORADO STATE UNIV	Mason, C. C.	JSC	Striffler, W. D.	NAS 9-13142	1635
32	COLUMBIA UNIVERSITY	Bryson, R. P.	HQ-SM	Dalziel, I. W.	NGR 33-008-106	2734
32	CORNELL UNIVERSITY	Szajna, E. W.	GSFC	Hardy, E. E.	NAS 5-21886	2748
32	CORNELL UNIVERSITY		HQ-SL		NASW 2445	2754
32	CORNELL UNIVERSITY	Bryson, R. P.	HQ-SM	Turcotte, D. L.	NGR 33-010-108	2768
32	CORNELL UNIVERSITY	Bryson, R. P.	HQ-SM	Kuckes, A. F.	NGR 33-010-178	2776
32	DARTMOUTH COLLEGE	Miller, M. L.	JSC	Stoiber, R. E.	NAS 9-13311	2603
32	FAIRLEIGH-DICKNSON U	Bryson, R. P.	HQ-SM	Adams, J. B.	NGL 31-006-010	2620
32	HAMILTON COLLEGE	Dwornik, S. E.	HQ-SL	Poller, D. B.	NGR 33-192-001	2795
32	HARVARD UNIVERSITY	Harris, J. W.	JSC	Fronde, C.	NGR 22-007-191	2236
32	HARVARD UNIVERSITY	Geib, D. S.	HQ-SL	Borghoorn, E. S.	NGL 22-007-069	2225
32	HARVARD UNIVERSITY	Bryson, R. P.	HQ-SM	Hays, J. F.	NGR 22-007-175	2234
32	INDIANA U-BLOOMINGTN		GSFC		NAS 5-21795	1974
32	JOHNS HOPKINS UNIV		HQ-SG		NGR 21-001-119	2140
32	JOHNS HOPKINS UNIV	Bryson, R. P.	HQ-SM	Marcus, A. H.	NGR 21-001-080	2135
32	LEHIGH UNIVERSITY	Harris, J. W.	JSC	Sclar, C. B.	NAS 9-8084	3051
32	LEHIGH UNIVERSITY	Harris, J. W.	JSC	Goldstein, J. I.	NAS 9-10401	3052
32	LEHIGH UNIVERSITY	Bryson, R. P.	HQ-SM	Goldstein, J. I.	NGR 39-007-043	3056
32	LONG ISLAND UNIV	Szajna, E. F.	GSFC	Yost, E.	NAS 5-21793	2798
32	LONG ISLAND UNIV	Hogan, J. S.	GSFC	Yost, E.	NGR 33-151-006	2799
32	MASS INST OF TECH	Tewart, R. S.	JSC	Wing, C. G.	NAS 9-10749	2293
32	MASS INST OF TECH	Brunk, W. E.	HQ-SL	Barrett, A. H.	NGL 22-009-016	2314
32	MASS INST OF TECH	Dwornik, S. E.	HQ-SL	Thomas, T. B.	NGR 22-009-625	2356
32	MASS INST OF TECH	Dwornik, S. E.	HQ-SL	McGetchin, T. R.	NGR 22-009-637	2359
32	MASS INST OF TECH	Bryson, R. P.	HQ-SM	McCord, T. B.	NGR 22-009-350	2339
32	MISSISSIPPI STATE U	Stonesifer, G. R.	GSFC	Ingels, F. M.	NAS 5-21817	2530
32	NO CAROLINA STATE U	Ensor, G. J.	GSFC	Welby, C. W.	NAS 5-21732	2896

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32	NWN ST U-LOUISIANA	Dwornik, S. E.	HQ-SL	Dehon, R. A.	NGR 19-013-002	2106
32	NORTHWESTERN UNIV	Bryson, R. P.	HQ-SM	Hynek, J. A.	NGL 14-007-016	1891
32	OHIO STATE UNIV	Nance, R. L.	JSC	Mueller, I. I.	NAS 9-9695	2959
32	OHIO STATE UNIV	Norman, P.	JSC	Ghosh, S. K.	NAS 9-9696	2960
32	OHIO STATE UNIV	Murphy, J. P.	HQ-ES	Mueller, I. I.	NASW 2435	2963
32	OREGON STATE UNIV	Bryson, R. P.	HQ-SM	Schmitt, R. A.	NGL 38-002-020	3013
32	PENNSYLVANIA STATE U	Miller, M. L.	JSC	McMurtry, G. J.	NAS 9-13406	3069
32	PENNSYLVANIA STATE U	Bryson, R. P.	HQ-SM	Gold, D. P.	NGL 39-009-010	3073
32	PRINCETON UNIVERSITY	Bryson, R. P.	HQ-SM	Phinney, R. A.	NGR 31-001-274	2667
32	PURDUE UNIVERSITY	Bryson, R. P.	HQ-SM	Lipschutz, M. E.	NGL 15-005-140	1995
32	RICE UNIVERSITY	Meese, K. J.	GSFC	Anderson, H.	NAS 5-9317	3212
32	RICE UNIVERSITY	Harris, J. W.	JSC	Heymann, D.	NGL 44-006-127	3223
32	RICE UNIVERSITY	Harris, J. W.	JSC	Powell, B. N.	NGR 44-006-142	3225
32	SO DAKOTA SCHL MINES	Bryson, R. P.	HQ-SM	Rahn, P. H.	NGR 42-001-006	3148
32	STANFORD UNIVERSITY	Hovis, W. A.	GSFC	Lyon, R. J.	NAS 5-21733	1285
32	STANFORD UNIVERSITY	Crump, E. W.	GSFC	Rich, E. I.	NAS 5-21775	1286
32	STANFORD UNIVERSITY	Crump, E. W.	GSFC	Lyon, R. P.	NAS 5-21884	1287
32	STANFORD UNIVERSITY	Hensley, W.	JSC	Lyon, R. J.	NAS 9-7313	1294
32	STANFORD UNIVERSITY		HQ-SL	Howard, A. D.	NGR 05-020-267	1325
32	STANFORD UNIVERSITY	Dwornik, S. E.	HQ-SL	Howard, H. T.	NGR 05-020-649	1359
32	STATE UNIV NY-BUFFAL	Dwornik, S. E.	HQ-SL	King, J. S.	NGR 33-015-108	2846
32	ST U NY COL-GENESCO	Hardee, S. N.	JSC	Young, R. A.	NAS 9-12770	2869
32	TEXAS A&M UNIVERSITY	Potter, A. E.	JSC	Toler, R. W.	NAS 9-13545	3261
32	TEXAS A&M UNIVERSITY	Bryson, R. P.	HQ-SM	Rowe, M. W.	NGR 44-001-152	3270
32	TULANE UNIVERSITY	Dwornik, S. E.	HQ-SL	Parsley, R. L.	NGR 19-002-032	2116
32	TULANE UNIVERSITY	Dwornik, S. E.	HQ-SL	Meyer, J. D.	NGR 19-002-038	2117
32	UNIV ALA-TUSCALOOSA	Stonesifer, G. R.	GSFC	Henry, H. R.	NAS 5-21876	1074
32	UNIV ALA-TUSCALOOSA	Bensko, J., Jr.	MSFC	Hughes, T. H.	NAS 8-29936	1085
32	UNIV ALA-TUSCALOOSA	Bensko, J., Jr.	MSFC	Stow, S. H.	NAS 8-29937	1086
32	UNIV ALASKA-FAIRBNKS	Crump, E. W.	GSFC	Belon, A. E.	NAS 5-21833	1093
32	UNIV ALASKA-FAIRBNKS	Laidley, R.	JSC	Forbes, R. B.	NGL 02-001-063	1100
32	UNIV OF ARIZONA	Young, R. S.	HQ-SL	Nagy, B.	NGR 03-002-171	1150
32	UNIV OF ARIZONA	Bryson, R. P.	HQ-SM	Kuiper, G. P.	NGL 03-002-191	1144
32	UNIV CALIF-BERKELEY	Iufer, E. J.	ARC	Bhattacharyya, B. K.	NAS 2-7159	1374
32	UNIV CALIF-BERKELEY	Crump, E. W.	GSFC	Colwell, R. N.	NAS 5-21827	1379
32	UNIV CALIF-BERKELEY	Harris, J. W.	JSC	Alvarez, L. W.	NAS 9-8806	1387
32	UNIV CALIF-BERKELEY		JSC		NAS 9-12005	1392
32	UNIV CALIF-BERKELEY	Young, R. S.	HQ-SL	Calvin, M.	NGL 05-003-003	1393
32	UNIV CALIF-BERKELEY	Dwornik, S. E.	HQ-SL	Calvin, M.	NGR 05-003-302	1410
32	UNIV CALIF-BERKELEY	Dwornik, S. E.	HQ-SL	Anderson, K. A.	NGR 05-003-431	1416
32	UNIV CALIF-BERKELEY	Bryson, R. P.	HQ-SM	Mitchell, J. K.	NGR 05-003-406	1414
32	UNIV CALIF-DAVIS		HQ-SG	Hurley, J. P.	NGR 05-004-006	1457
32	UNIV CALIF-DAVIS	Bryson, R. P.	HQ-SM	Borg, R. J.	NGR 05-004-074	1461
32	UNIV CALIF-L ANGELES	Wales, R. O.	GSFC	Coleman, P. J.	NAS 5-11674	1473
32	UNIV CALIF-L ANGELES	Harris, J. W.	JSC	Schopf, J. W.	NGR 05-007-292	1503
32	UNIV CALIF-L ANGELES		JSC	Libby, W. F.	NGR 05-007-345	1512
32	UNIV CALIF-L ANGELES	Young, R. S.	HQ-SL	Libby, W. F.	NGR 05-007-215	1497
32	UNIV CALIF-L ANGELES	Young, R. S.	HQ-SL	Kaplan, I. R.	NGR 05-007-221	1498
32	UNIV CALIF-L ANGELES	Dwornik, S. E.	HQ-SL	Lingenfelter, R. E.	NGR 05-007-317	1505
32	UNIV CALIF-L ANGELES	Mitz, M. A.	HQ-SL	Wetherill, G. W.	NGR 05-007-326	1507
32	UNIV CALIF-L ANGELES	Bryson, R. P.	HQ-SM	Kaula, W. M.	NGL 05-007-002	1481
32	UNIV CALIF-L ANGELES	Bryson, R. P.	HQ-SM	Wetherill, G. W.	NGL 05-007-005	1484
32	UNIV CALIF-L ANGELES	Bryson, R. P.	HQ-SM	Kennedy, G. C.	NGL 05-007-006	1485
32	UNIV CALIF-L ANGELES	Bryson, R. P.	HQ-SM	Stein, W. A.	NGR 05-007-329	1510
32	UNIV CALIF-L ANGELES	Bryson, R. P.	HQ-SM	Coleman, P. J.	NGR 05-007-351	1513
32	UNIV CALIF-SAN DIEGO	Bryson, R. P.	HQ-SM	Arrhenius, G.	NGL 05-009-002	1538
32	UNIV CALIF-SAN DIEGO	Bryson, R. P.	HQ-SM	Arnold, J. R.	NGL 05-009-004	1539
32	UNIV CALIF-SAN DIEGO	Bryson, R. P.	HQ-SM	Suess, H. E.	NGL 05-009-005	1540

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32	UNIV CALIF-SAN DIEGO	Bryson, R. P.	HQ-SM	Arnold, J. R.	NGR 05-005-005	1549
32	UNIV CALIF-SAN DIEGO	Bryson, R. P.	HQ-SM	Marti, K.	NGR 05-009-170	1558
32	UNIV CALIF-S BARBARA	Harris, J. W.	JSC	Tilton, G. R.	NGR 05-010-081	1579
32	UNIV CALIF-S BARBARA	Young, R. S.	HQ-SL	Cloud, P. E.	NGR 05-010-035	1577
32	UNIV CALIF-S BARBARA	Dwornik, S. E.	HQ-SL	Peale, S. J.	NGR 05-010-062	1578
32	UNIV CALIF-S BARBARA	Bryson, R. P.	HQ-SM	Fisher, R. V.	NGL 05-010-019	1574
32	UNIV OF CHICAGO	Dwornik, S. E.	HQ-SL	Turkevich, A. L.	NGR 14-001-135	1929
32	UNIV OF CHICAGO	Young, R. S.	HQ-SL	Anders, E.	NGR 14-001-203	1941
32	UNIV OF CHICAGO	Bryson, R. P.	HQ-SM	Anders, E.	NGL 14-001-010	1921
32	UNIV OF CHICAGO	Bryson, R. P.	HQ-SM	Grossman, L.	NGR 14-001-249	1946
32	UNIV COLORADO-BOLDR	Dwornik, S. E.	HQ-SL	Peterson, J. E.	NGR 06-003-177	1665
32	UNIV COLORADO-BOLDR	Dwornik, S. E.	HQ-SL	Peterson, J. E.	NGR 06-003-199	1670
32	UNIV OF DENVER		GSFC		NAS 5-9883	1674
32	UNIV OF GEORGIA	Dwornik, S. E.	HQ-SL	Herz, N.	NGR 11-003-033	1862
32	UNIV OF GEORGIA	Dwornik, S. E.	HQ-SL	Howard, J. H., III	NGR 11-003-037	1863
32	UNIV OF HOUSTON	Harris, J. W.	JSC	King, E. A.	NGL 44-005-184	3308
32	UNIV OF HOUSTON	Young, R. S.	HQ-SL	Oro, J.	NGR 44-005-002	3309
32	UNIV OF HOUSTON	Dwornik, S. E.	HQ-SL	King, E. A., Jr.	NGR 44-005-131	3314
32	UNIV OF HOUSTON	Bryson, R. P.	HQ-SM	King, E. A., Jr.	NGR 44-005-188	3319
32	UNIV OF IDAHO	Morrison, D. A.	JSC	Reid, R. R.	NGR 13-001-008	1883
32	UNIV OF IDAHO	Bryson, R. P.	HQ-SM	Hall, W. B.	NGR 13-001-014	1884
32	UNIV OF IOWA	Stonesifer, G. R.	GSFC	Hoppin, R. A.	NAS 5-21852	2037
32	UNIV OF IOWA	Miller, M.	JSC	Hoppin, R. A.	NAS 9-13313	2040
32	UNIV MARYLAND-COL PK	Schnetzler, C. C.	GSFC	Weidner, J. R.	NGR 21-002-368	2191
32	UNIV OF MASS-AMHERST	Dwornik, S. E.	HQ-SL	Hartshorn, J. H.	NGR 22-010-054	2403
32	UNIV OF MASS-AMHERST	Dwornik, S. E.	HQ-SL	McGill, G. E.	NGR 22-010-076	2405
32	UNIV OF MASS-AMHERST	Bryson, R. P.	HQ-SM	McGill, G. E.	NGR 22-010-052	2402
32	UNIV OF MIAMI	Young, R. S.	HQ-SL	Muller, G.	NGR 10-007-054	1810
32	UNIV MICH-ANN ARBOR	Dwornik, S. E.	HQ-SL	Smith, C. I.	NGR 23-005-563	2478
32	UNIV MICH-ANN ARBOR	Bryson, R. P.	HQ-SM	Evans, B. J.	NGR 23-005-537	2470
32	U MINN-MNPLS-ST PAUL	Harris, J. W.	JSC	Banerjee, S. K.	NGR 24-005-248	2520
32	UNIV OF MONTANA	Crump, E. W.	GSFC	Weidman, R. M.	NAS 5-21826	2587
32	UNIV OF NEVADA-RENO	Miller, M.	JSC	Quade, J.	NAS 9-13274	2599
32	UNIV OF NEW MEXICO	Dwornik, S. E.	HQ-SL	Elston, W. E.	NGR 32-004-062	2704
32	UNIV OF NEW MEXICO	Bryson, R. P.	HQ-SM	Keil, K.	NGL 32-004-011	2699
32	UNIV OF NEW MEXICO	Bryson, R. P.	HQ-SM	Keil, K.	NGL 32-004-064	2702
32	UNIV OREGON-EUGENE	Strangway, D. W.	JSC	Blank, H. R.	NAS 9-9690	3023
32	UNIV OREGON-EUGENE	Dwornik, S. E.	HQ-SL	Goles, G. G.	NGR 38-003-025	3028
32	UNIV OREGON-EUGENE	Bryson, R. P.	HQ-SM	Goles, G. G.	NGL 38-003-010	3024
32	UNIV OREGON-EUGENE	Bryson, R. P.	HQ-SM	Weill, D. F.	NGR 38-003-020	3027
32	UNIV OF PITTSBURGH	Dwornik, S. E.	HQ-SL	Hapke, B.	NGR 39-011-146	3114
32	UNIV OF PITTSBURGH	Bryson, R. P.	HQ-SM	Hapke, B. W.	NGL 39-011-085	3109
32	UNIV OF PITTSBURGH	Bryson, R. P.	HQ-SM	Fuller, M.	NGR 39-011-156	3116
32	UNIV OF SANTA CLARA	Dwornik, S. E.	HQ-SL	Greeley, R.	NGR 05-017-037	1597
32	UNIV TEXAS-AUSTIN	Berbert, J. H.	GSFC	Tupa, B.	NSR 44-012-120	3352
32	UNIV TEXAS-AUSTIN	Dornbach, J. E.	JSC	Brown, L. F.	NAS 9-12919	3329
32	UNIV TEXAS-AUSTIN	Miller, M.	JSC	Baker, V. R.	NAS 9-13312	3332
32	UNIV TEXAS-AUSTIN	Young, R. S.	HQ-SL	Parker, P. L.	NGR 44-012-225	3348
32	UNIV TEXAS-AUSTIN	Bryson, R. P.	HQ-SM	Clabaugh, S. E.	NGL 44-012-045	3336
32	UNIV TEXAS-EL PASO	Bryson, R. P.	HQ-SM	Hoffer, J. M.	NGR 44-012-147	3388
32	UNIV OF UTAH	Crump, E. W.	GSFC	Jensen, M. L.	NAS 5-21883	3412
32	UNIV OF UTAH	Lafferty, P. E.	JSC	Ward, S. H.	NAS 9-12168	3415
32	UNIV OF UTAH	Miller, M. L.	JSC	Jensen, M. L.	NAS 9-13322	3416
32	UNIV OF UTAH	Harris, J. W.	JSC	Ward, S. H.	NGR 45-003-090	3422
32	UNIV OF UTAH	Dwornik, S. E.	HQ-SL	Wilson, R. C.	NGR 45-003-085	3421
32	UNIV OF UTAH	Dwornik, S. E.	HQ-SL	Wilson, R. C.	NGR 45-003-095	3424
32	UNIV OF VERMONT	Szajna, E. F.	GSFC	Lind, A. O.	NAS 5-21753	3427
32	UNIV OF VIRGINIA	Allingham, J. W.	HQ-SL	Dolan, R.	NGR 47-005-172	3480

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32	UNIV OF VIRGINIA	Bryson, R. P.	HQ-SM	Allen, R. O.	NGR 47-005-176	3481
32	UNIV OF WASHINGTON	Dwornik, S. E.	HQ-SL	Vgolihi, F. C.	NGR 48-002-153	3551
32	UNIV WISC-MADISON	Stonesifer, G. R.	GSFC	Clapp, J. L.	NAS 5-21754	3571
32	UNIV OF WYOMING	Stonesifer, G. R.	GSFC	Houston, R. S.	NAS 5-21799	3601
32	UNIV OF WYOMING	Fihelly, A. W.	GSFC	Houston, R. S.	NAS 5-21818	3602
32	UNIV OF WYOMING	Miller, M. L.	JSC	Houston, R. S.	NAS 9-13298	3604
32	VIRGINIA POLY INST	Fihelly, A. W.	GSFC	Glover, L., III	NAS 5-21729	3497
32	VIRGINIA STATE COL	Dwornik, S. E.	HQ-SL	Gipson, M., Jr.	NGR 47-014-004	3523
32	WEST TEXAS ST UNIV		HQ-SL		NGR 44-015-003	3409
32	WOODSHOLE OCEAN INST		JSC		NAS 9-12563	2406
32	WOODSHOLE OCEAN INST		JSC		NAS 9-12564	2407
32	YALE UNIVERSITY		JSC	Clark, S. P.	NGR 07-004-039	1715
32	YALE UNIVERSITY	Burk, W. E.	HQ-SL	Carter, N. L.	NGR 07-004-010	1711
32	YALE UNIVERSITY	Young, R. S.	HQ-SL	McAlester, A. L.	NGR 07-004-034	1713
32	YALE UNIVERSITY	Allingham, J. W.	HQ-SL	Skinner, B. J.	NGR 07-004-144	1718
32	YALE UNIVERSITY	Dwornik, S. E.	HQ-SL	Skinner, B. J.	NGR 07-004-157	1720
32	YALE UNIVERSITY	Bryson, R. P.	HQ-SM	Skinner, B. J.	NGL 07-004-103	1709
33	CITY COLLEGE OF N Y	Brown, S. C.	MSFC	Pierson, W. T.	NAS 8-29616	2710
33	COLLEGE OF WM & MARY	Yeager, P. R.	LARC	Harcum, E. R.	NAS 1-9461	3430
33	COLORADO STATE UNIV	Gedney, R. T.	LERC	Veckers, R. S.	NAS 3-17213	1628
33	LONG ISLAND UNIV	Szajna, E. J.	GSFC	Yost, E.	NAS 5-21792	2797
33	NEW YORK UNIVERSITY	Brown, S. C.	MSFC	Pierson, W. J.	NAS 8-29578	2807
33	OLD DOMINION UNIV	Fihelly, A. W.	GSFC	Marshall, H. G.	NAS 5-21816	3446
33	OLD DOMINION UNIV	Houghton, W. M.	LARC	Bandy, A. R.	NGR 47-003-071	3459
33	TEXAS A&M UNIVERSITY	Mc Pherson, T. M.	JSC	Burnett, N. C.	NAS 9-13349	3259
33	TULANE UNIVERSITY	Tilton, E. L.	JSC		NAS 9-12966	2113
33	UNIV ALASKA-FAIRBANKS	Smith, W. S.	GSFC	Staley, G.	NAS 5-22167	1094
33	UNIV OF ARIZONA	Stonesifer, G. R.	GSFC	Hendrickson, J. R.	NAS 5-21777	1122
33	UNIV OF DELAWARE	Fihelly, A. W.	GSFC	Szekielda, K. H.	NAS 5-21784	1725
33	UNIV OF DELAWARE	Byrns, Z.	JSC	Szekielda, K.	NAS 9-13344	1727
33	UNIV OF MASS-AMHERST	Hovis, W. A.	GSFC	Yentsch, C. S.	NAS 5-21813	2394
39	ALABAMA A&M UNIV	McDonough, G.	MSFC	Sharma, G. C.	NGR 01-001-014	1002
39	ALABAMA A&M UNIV	Pohly, J. H.	HQ-PY	Manager, M. C.	NGR 01-001-018	1004
39	ALABAMA A&M UNIV	Pohly, J. G.	HQ-PY	Golden, M. S.	NGR 01-001-023	1007
39	AMERICAN UNIVERSITY	Fihelly, A. W.	GSFC	MacLeod, N. H.	NAS 5-21892	1731
39	AUSTIN STATE UNIV	Forbes, C. D.	JSC		NAS 9-12492	3186
39	BETHUNE-COOKMAN COL	Pohly, J. G.	HQ-PY	Poonai, P.	NGR 10-022-001	1777
39	CALIF INST OF TECH		LARC		NAS 1-12311	1177
39	CAL STATE U-SAN JOSE	Arvesen, J. C.	ARC	Weaver, E. C.	NGR 05-046-015	1255
39	CENTRAL ST UNIV-OHIO	Pohly, J. G.	HQ-PY	Rubin, D.	NGR 36-033-002	2950
39	CLEMSON UNIV-CLEMSON	Hall, J. B., Jr.	LARC	Hestor, J. C.	NAS 1-11297	3134
39	COLORADO SCH OF MINE	Park, A. B.	HQ-ER	Lee, K.	NGL 06-001-015	1623
39	COLORADO STATE UNIV	Turner, R. E.	MSFC	Sadeh, W. Z.	NAS 8-28590	1631
39	COLORADO STATE UNIV	Sloan, J. C.	MSFC	Marschner, B. W.	NAS 8-28655	1632
39	CORNELL UNIVERSITY	Szajna, E. J.	GSFC	Dethier, B. E.	NAS 5-21781	2746
39	CORNELL UNIVERSITY	Hicks, R. D.	JSC	Hardy, E. E.	NAS 9-13364	2752
39	CORNELL UNIVERSITY	Vitale, J. A.	HQ-PY	Liang, T.	NGL 33-010-171	2762
39	DARTMOUTH COLLEGE	Szajna, E. F.	GSFC	Simpson, R. B.	NAS 5-21749	2602
39	DILLARD UNIVERSITY	Pohly, J. G.	HQ-PY	Rogers, R.	NGR 19-015-001	2079
39	DUDLEY OBSERVATORY	Reina, B., Jr.	JSC	Hemenway, C. L.	NAS 9-10380	2785
39	FLORIDA INST OF TECH	Lee, W. H.	KSC	Nevin, T. A.	NGR 10-015-008	1778
39	FLORIDA TECH UNIV	Lee, W. H.	KSC	Miller, H. A.	NGR 10-019-004	1785
39	FLORIDA TECH UNIV	Lee, W. H.	KSC	Nimmo, B. G.	NGR 10-019-009	1786
39	HAMPTON INSTITUTE	Martin, D. J.	LARC	Horton, L.	NGR 47-020-003	3440
39	HOWARD UNIVERSITY	Pohly, J. G.	HQ-PY	Ferguson, G. A.	NGL 09-011-046	1769
39	ILL INST OF TECH	Bryson, R. P.	HQ-SM	Higgins, G. T.	NGR 14-004-049	1887
39	LA STATE U-BAT ROUGE	McDonough, G. F.	MSFC	Modlin, D. G., Jr.	NAS 8-29012	2091
39	LA STATE U-BAT ROUGE	Redding, E. R.	HQ-PY	Whitehurst, C. A.	NGL 19-001-097	2097

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39	LA STATE U-BAT ROUGE	Vitale, J. A.	HQ-PY	Whitehurst, C. A.	NGL 19-001-105	2098
39	LA STATE U-NEW ORLNS	McDonough, G. F.	MSFC	Saussy, G. A.	NAS 8-28955	2101
39	LOYOLA UNIV-LA	McDonough, G. F.	MSFC	Christman, J. F.	NAS 8-28957	2105
39	MICHIGAN STATE UNIV	Szajna, E. J.	GSFC	Anderson, A.	NAS 5-21834	2413
39	MICHIGAN STATE UNIV	Vitale, J. A.	HQ-PY	Boylan, M. G.	NGL 23-004-083	2415
39	MISSISSIPPI STATE U	Stonesifer, G. R.	GSFC	Bouchillon, C. W.	NAS 5-21881	2531
39	MISSISSIPPI STATE U	McDonough, G. F.	MSFC	McKee, J. C., Jr.	NAS 8-29036	2536
39	MISSISSIPPI STATE U	Mooneyhan, D. W.	MTF	Bouchillon, C. W.	NAS 9-11607	2537
39	MISSISSIPPI STATE U	Redding, E. R.	HQ-PY	Brown, L. R.	NGL 25-001-040	2541
39	NEW YORK UNIVERSITY	Byrns, Z. H.	JSC	Pierson, W. J., Jr.	NAS 9-13356	2808
39	NEW YORK UNIVERSITY	Neustadter, H. E.	LERC	Hoydysh, W. G.	NGR 33-016-197	2820
39	NO CAROLINA STATE U	Hicks, R. D.	JSC	Welby, C.	NAS 9-13321	2898
39	NORTHEASTERN UNIV	Lehmann, J.	HQ-ER	Nowak, W. B.	NGR 22-011-072	2385
39	OLD DOMINION UNIV	Vitale, J. A.	HQ-PY	Kindle, E. C.	NGL 47-003-067	3452
39	OREGON STATE UNIV	Crump, E. W.	GSFC	Smionson, G. H.	NAS 5-21831	3012
39	OREGON STATE UNIV	Vitale, J. A.	HQ-PY	Poulton, C. E.	NGL 38-002-053	3016
39	PENNSYLVANIA STATE U	Szajna, E. F.	GSFC	McMurtry, G. J.	NAS 5-23133	3066
39	PORTLAND STATE UNIV	Mechelay, J. E.	JSC	Fitzgerald, A.	NAS 9-13482	3022
39	PRINCETON UNIVERSITY	Bryson, R. P.	HQ-SM	Deffeyes	NGL 31-001-003	2637
39	PURDUE UNIVERSITY	Fihelly, A. W.	GSFC	McDonald, R. B.	NAS 5-21773	1985
39	PURDUE UNIVERSITY	Hicks, R. D.	JSC	Silva, L. F.	NAS 9-13301	1990
39	PURDUE UNIVERSITY	Hicks, R.	JSC	Hoffer, R. M.	NAS 9-13380	1991
39	PURDUE UNIVERSITY	Vitale, J. A.	HQ-PY	Landgrebe, D. A.	NGL 15-005-186	1997
39	RICE UNIVERSITY	Eichelman, W. F.	JSC	Low, F.	NAS 9-10428	3216
39	SO DAKOTA SCHL MINES	Quinn, H. B.	HQ-PY	Schleusener, R. A.	NGL 42-001-004	3147
39	SO DAKOTA STATE UNIV	Stonesifer, G. R.	GSFC	Meyers, V. I.	NAS 5-21774	3149
39	SO UNIV-NEW ORLEANS	Pohly, J. G.	HQ-PY	Lucas, E. C.	NGR 19-014-001	2111
39	STANFORD UNIVERSITY	Weeks, E.	JSC	Kovach, R. L.	NAS 9-5632	1293
39	STANFORD UNIVERSITY	Lafferty, P. E.	JSC	Howard, H. T.	NAS 9-10579	1295
39	STANFORD UNIVERSITY	Roberts, W. T.	MSFC	Helliwell, R. A.	NGR 05-020-579	1350
39	STANFORD UNIVERSITY	Schmerling, E. R.	HQ-SG	Craft, T. A.	NGR 05-020-407	1331
39	STANFORD UNIVERSITY	Bryson, R. P.	HQ-SM	Kovach, R. L.	NGL 05-020-232	1308
39	STATE U NY-STONY BRK	Hardee, S. N.	JSC	Owen, T.	NAS 9-11640	2850
39	STATE U NY-STONY BRK	Belles, F. E.	LERC	Berlad, A. L.	NGR 33-015-163	2865
39	TEXAS A&M UNIVERSITY	Arvesen, J. C.	ARC	Plass, G. N.	NGR 44-001-125	3268
39	TEXAS A&M UNIVERSITY	Potter, A. E.	JSC	Rouse, J. W.	NAS 9-11155	3251
39	TEXAS A&M UNIVERSITY	Walkinshaw, C. H.	JSC	Halliwell, R. S.	NAS 9-12050	3255
39	TEXAS A&M UNIVERSITY	Vitale, J. A.	HQ-PY	Rouse, J. W.	NGL 44-001-001	3262
39	TEXAS TECH UNIV	Fihelly, A. W.	GSFC	Miller, W. D.	NAS 5-21720	3275
39	TULANE UNIVERSITY	McDonough, G. F.	MSFC	Hidalgo, J. V.	NAS 8-29026	2112
39	UNIV ALA-HUNTSVILLE	Dalins, I.	MSFC	McCarty, V.	NAS 8-26795	1047
39	UNIV ALA-HUNTSVILLE	Hamby, H. G.	MSFC		NAS 8-30216	1071
39	UNIV ALASKA-FAIRBNKS	Trichel, M. C.	JSC	Davis, T. N.	NAS 9-11815	1098
39	UNIV ALASKA-FAIRBNKS	Vitale, J. A.	HQ-PY	Belan, A. C.	NGL 02-001-092	1101
39	UNIV OF ARIZONA	Stonesifer, G. R.	GSFC	Smith, E. L., Jr.	NAS 5-21820	1125
39	UNIV OF ARIZONA	Vitale, J. A.	HQ-PY	Johnson, J. D.	NGL 03-002-313	1145
39	UNIV CALIF-BERKELEY	Poppoff, I. G.	ARC	Colwell, R. N.	NAS 2-7562	1375
39	UNIV CALIF-BERKELEY	Poppoff, I. G.	ARC	Colwell, R. N.	NAS 2-7567	1376
39	UNIV CALIF-BERKELEY	Poppoff, I. G.	ARC	Colewell, R. N.	NGL 05-003-404	1403
39	UNIV CALIF-BERKELEY	Lafferty, P.	JSC	Anderson, K. A.	NAS 9-10509	1388
39	UNIV CALIF-DAVIS	Taketa, S. T.	ARC	Mazelis, M.	NAS 2-6633	1445
39	UNIV CALIF-RIVERSIDE	Gloria, H. R.	ARC	Pitts, J. N.	NGR 05-008-029	1522
39	UNIV CALIF-RIVERSIDE	Crump, E. W.	GSFC	Lewis, L. N.	NAS 5-21771	1519
39	UNIV CALIF-SAN DIEGO	Lafferty, P.	JSC	Arnold, J. R.	NAS 9-10670	1534
39	UNIV CALIF-SAN DIEGO	Schmerling, E. R.	HQ-SG	Daryenik, J. R.	NGR 05-009-180	1561
39	UNIV OF CHICAGO	Harris, J. W.	JSC	Anders, E.	NAS 9-7887	1915
39	UNIV COLORADO-BOLDR	Vitale, J. A.	HQ-PY	Ines, J. D.	NGL 06-003-200	1659
39	UNIV OF DELAWARE	Fihelly, A. W.	GSFC	Klemas, V.	NAS 5-21837	1726

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39	UNIV OF DELAWARE	Johnson, R. W.	LARC	Klemas, V.	NAS 1-12304	1724
39	UNIV OF DENVER	Paludan, C. T.	MSFC	Howard, W. A.	NAS 8-28216	1677
39	UNIV OF IDAHO	Crump, E. W.	GSFC	Tisdale, E. W.	NAS 5-21850	1881
39	UNIV ILLINOIS-URBANA	Watson, V. R.	ARC	Ray, R. M.	NGR 14-005-202	1971
39	UNIV OF KANSAS	Stonesifer, G. R.	GSFC	Barr, B. G.	NAS 5-21822	2049
39	UNIV OF KANSAS	Vitale, J. A.	HQ-PY	Barr, B. G.	NGL 17-004-024	2058
39	UNIV MICH-ANN ARBOR	Arversen, J. C.	ARC	Anding, D. C.	NAS 2-6015	2425
39	UNIV MICH-ANN ARBOR	Everton, E. R.	WS	Thompson, F. J.	NAS 6-2058	2441
39	UNIV MICH-ANN ARBOR	Park, A. B.	HQ-ER	Cook, J. J.	NSR 23-005-480	2484
39	U MINN-MNPLS-ST PAUL	Vitale, J. A.	HQ-PY	Cahill, L. J., Jr.	NGL 24-005-263	2511
39	UNIV MO-KANSAS CITY	Starr, W. L.	HQ-SS		NAS 2-7078	2564
39	UNIV NEBRASKA-LINCLN	Stonesifer, G. R.	GSFC	Drew, J. V.	NAS 5-21756	2589
39	UNIV NEBRASKA-LINCLN	Vitale, J. A.	HQ-PY	Drew, J. V.	NGL 28-004-020	2594
39	UNIV OF NEVADA-RENO	Crump, E. W.	GSFC	Tueller, P. A.	NAS 5-21870	2597
39	UNIV OF NEVADA-RENO	Amsbury, D. L.	JSC	Quade, J.	NAS 9-7779	2598
39	UNIV OF PENNSYLVANIA	Wilson, J. W.	LARC	Shen, B. S.	NGR 39-010-114	3102
39	UNIV SO MISSISSIPPI	Vitale, J. A.	HQ-PY	Pinson, J. W.	NGL 25-005-007	2546
39	UNIV TENNESSEE-KNOXV	Ensor, G. J.	GSFC	Bodenheimer, R. E.	NAS 5-21875	3157
39	UNIV TENNESSEE-KNOXV	Ensor, G. J.	GSFC	De'Selm, H. R.	NAS 5-21882	3158
39	UNIV TENNESSEE-KNOXV	Messer, C. W.	MSFC	Shahrokh, F.	NGR 43-001-115	3173
39	UNIV TEXAS-DALLAS	Baker, M. F.	JSC	Hoffman, J. H.	NAS 9-12999	3371
39	UNIV TEX-PUB HEALTH	Fuller, C. E.	JSC	Davis, E. M.	NAS 9-12040	3402
39	UNIV TEX-PUB HEALTH	Fuller, C. E.	JSC	Severs, R. K.	NAS 9-12041	3403
39	UNIV TEX-PUB HEALTH	Eandi, B. K.	JSC	Chen, C. T.	NGR 44-084-002	3408
39	UNIV OF WASHINGTON		ARC		NAS 2-6778	3529
39	UNIV WISC-MADISON	Vitale, J. A.	HQ-PY	Suomi, V. E.	NGL 50-002-114	3581
39	UNIV WISC-MADISON	Vitale, J. A.	HQ-PY	Clapp, J. L.	NGL 50-002-127	3582
39	VIRGINIA POLY INST	Bettle, J. F.	WS	Petry, D. E.	NAS 6-1863	3498
39	WEST VIRGINIA UNIV	Kirby, C. E.	LARC	Steinhardt, E.	NGR 49-001-061	3558
41	ALABAMA A&M UNIV	Pohly, J. G.	HQ-PY	Lowsine, L.	NGR 01-001-013	1001
41	BOSTON UNIVERSITY	Yates, E. C., Jr.	LARC	Murino, L.	NGR 22-004-030	2213
41	CALIF INST OF TECH	Aiken, T. N.	ARC	Harris, G. L.	NGR 05-002-239	1225
41	CALIF INST OF TECH	Carter, C. H.	HQ-PY	Cole, D.	NGL 05-002-229	1209
41	CALIF INST OF TECH	Roudebush, W. H.	HQ-RA	Liepmann, H. W.	NGL 05-002-002	1194
41	CASE WESTERN RESERVE	Stroud, W. J.	LARC	Kicher, T. P.	NGL 36-003-002	2929
41	CASE WESTERN RESERVE	Anderson, B. H.	LERC	Reshotko, E.	NGL 36-027-032	2933
41	CASE WESTERN RESERVE	Holdeman, J. D.	LERC	Greber, I.	NGR 36-027-008	2936
41	CASE WESTERN RESERVE	Anderson, B. H.	LERC	Reshotko, E.	NGR 36-027-038	2940
41	CATHOLIC UNIVERSITY	Deissler, R. G.	LERC	Ling, S. C.	NGR 09-005-099	1742
41	CATHOLIC UNIVERSITY	Gessow, A.	HQ-RA	Ling, S. C.	NGL 09-005-067	1735
41	CHRISTPHR NEWPRT COL	Jewel, J. W., Jr.	LARC	McMurrin, R. E.	NAS 1-12152	3429
41	CLARKSON COL OF TECH	Stroud, W. J.	LARC	Thornton, W. A.	NGL 33-007-075	2716
41	CLEMSON UNIV-CLEMSON	Doggett, R. V., Jr.	LARC	Rudisill, C. S.	NGR 41-001-027	3137
41	CLEMSON UNIV-CLEMSON	Grobmar, J.	LERC	Yang, T. T.	NGR 41-001-031	3138
41	COLORADO STATE UNIV	Jones, I. P.	MSFC	Karaki, S.	NAS 8-26234	1629
41	COLUMBIA UNIVERSITY		LARC	Friedman, M. B.	NGL 33-008-098	2730
41	CORNELL UNIVERSITY	Fulton, R. E.	LARC	Gallagher, R. H.	NGL 33-010-070	2760
41	GEORGE WASHINGTON U	Leybold, H. A.	LARC	Freudenthal, A. M.	NGR 09-010-058	1755
41	GEORGE WASHINGTON U	Shearin, J. G.	LARC	Liebowitz, H.	NGR 09-010-064	1756
41	GEORGE WASHINGTON U	Mulac, R. W.	LARC	Liebowitz, H.	NGR 09-010-074	1757
41	GEORGE WASHINGTON U	Fulton, R. E.	LARC	Liebowitz, H.	NGR 09-010-078	1758
41	GEORGE WASHINGTON U	Hubbard, H. H.	LARC	Liebowitz, H.	NGR 09-010-085	1760
41	GEORGIA INST OF TECH	Morse, H. A.	ARC	Wu, J.	NAS 2-6340	1826
41	GEORGIA INST OF TECH	Peterson, J. P.	LARC	Horton, W. H.	NGL 11-002-096	1844
41	GEORGIA INST OF TECH	Evans, J. S.	LARC	Huang, A. B.	NGR 11-002-157	1849
41	GEORGIA INST OF TECH	Bushnell, D. M.	LARC	Huang, A. B.	NGR 11-002-159	1851
41	GEORGIA INST OF TECH	Boatright, W. B.	LARC	Bangert, L. H.	NGR 11-002-177	1854
41	GEORGIA INST OF TECH	Priem, R. J.	LERC	Zinn, B. T.	NGL 11-002-083	1842

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41	GEORGIA INST OF TECH	Gessow, A.	HQ-RA	Huang, A. B.	NGL 11-002-062	1841
41	HAMPTON INSTITUTE	Jewel, J. W.	LARC		NAS 1-4815	3438
41	HAMPTON INSTITUTE	Jewel, J. W., Jr.	LARC		NAS 1-10898	3439
41	HOWARD UNIVERSITY	Fedor, J. V.	GSFC	Bainum, P. M.	NGR 09-011-039	1772
41	HOWARD UNIVERSITY	Pohly, J. G.	HQ-PY	Bainum, P. M.	NGR 09-011-053	1774
41	ILL INST OF TECH	Taylor, M. F.	LERC	Loran, Z.	NGL 14-004-028	1885
41	IOWA STATE UNIV	Kutler, P.	ARC	Vogel, J. M.	NGR 16-002-029	2020
41	IOWA STATE UNIV	Britsch, W. R.	LERC	Serovy, G. K.	NGL 16-002-005	2019
41	IOWA STATE UNIV	SandercocK, D. M.	LERC	Serovy, G. K.	NGR 16-002-036	2021
41	ISRAEL INST OF TECH		LARC	Nissim, E.	NGR 52-012-006	3620
41	LOUGHBOROUGH U TECH	Cawthorn, J. M.	LARC	Lowson, M. V.	NGR 52-140-002	3618
41	LA STATE U-BAT ROUGE	Teixeira, C.	JSC	Daniel, L. R., Jr.	NAS 9-12352	2093
41	MASS INST OF TECH	Ormiston, R. A.	ARC	Tong, P.	NAS 2-6175	2254
41	MASS INST OF TECH	Johnson, N. S.	ARC	Schlundt, R. W.	NAS 2-6437	2255
41	MASS INST OF TECH	Rabbott, J. P., Jr.	ARC	Ham, N. D.	NAS 2-7262	2256
41	MASS INST OF TECH	Rabbott, J. P., Jr.	ARC	Simpson, R. W.	NAS 2-7620	2258
41	MASS INST OF TECH	Schmitz, F. H.	ARC	Widnall, S. E.	NAS 2-7684	2260
41	MASS INST OF TECH	Corsiglia, V. R.	ARC	Widnall, S. E.	NGR 22-009-605	2353
41	MASS INST OF TECH	Szalai, K. J.	FRC	Whitaker, H. P.	NGL 22-009-548	2328
41	MASS INST OF TECH	Fuller, J. F.	JSC	Hoag, D.	NAS 9-13207	2301
41	MASS INST OF TECH	Whitten, J. B.	LARC	Young, L. R.	NGL 22-009-025	2316
41	MASS INST OF TECH	Cawthorn, J. M.	LARC	Pierce, A. D.	NGL 22-009-334	2324
41	MASS INST OF TECH	Rainey, A. G.	LARC	Deyst, J. J.	NGL 22-009-571	2329
41	MASS INST OF TECH	Mace, W. D.	LARC	Simpson, R. W.	NGL 22-009-640	2331
41	MASS INST OF TECH	Barger, R. L.	LARC	Toong, T. G.	NGR 22-009-618	2354
41	MASS INST OF TECH	Stone, R. W., Jr.	LARC	Young, L. R.	NGR 22-009-701	2365
41	MASS INST OF TECH	Phillips, W. H.	LARC	Markey, W.	NGR 22-009-731	2370
41	MASS INST OF TECH	Kyser, A. C.	LARC	Mar, J. W.	NGR 22-009-781	2373
41	MASS INST OF TECH	Stewart, E. C.	LARC	Deyst, J. J.	NGR 22-009-782	2374
41	MASS INST OF TECH	Evvard, J. C.	LERC	Kerrebrock, J. L.	NGL 22-009-383	2326
41	MASS INST OF TECH	Chiarito, P. T.	LERC	Witner, E. A.	NGR 22-009-339	2338
41	MASS INST OF TECH	Holdeman, J. D.	LERC	Fay, J. A.	NGR 22-009-378	2342
41	MASS INST OF TECH	Baumeister, K. J.	LERC	Ingard, K. U.	NGR 22-009-805	2377
41	MASS INST OF TECH	Reynolds, J. M.	MSFC	Lark, G. C.	NAS 8-24585	2272
41	MASS INST OF TECH		HQ-R		NASW 2524	2305
41	MASS INST OF TECH	Gessow, A.	HQ-RW	Melcher, J. R.	NGL 22-009-014	2312
41	MICHIGAN STATE UNIV	Weinstein, L. M.	LARC	Krzywoblocki, M. Z.	NGR 23-004-085	2419
41	MICHIGAN STATE UNIV	Morrisette, E. L.	LARC	Foss, J. F.	NGR 23-004-089	2420
41	MISSISSIPPI STATE U	Glaese, J. R.	MSFC	Thompson, J. F.	NAS 8-28833	2535
41	NEW YORK UNIVERSITY	Caradonna, F. X.	ARC	Isom, M. P.	NAS 2-6813	2805
41	NEW YORK UNIVERSITY	Hicks, R. M.	ARC	Garabedian, P. R.	NGR 33-016-201	2821
41	NEW YORK UNIVERSITY	Fetterman, D. E.	LARC	Ferri, A.	NGL 33-016-119	2810
41	NEW YORK UNIVERSITY	Huber, P. W.	LARC	Ferri, A.	NGR 33-016-131	2813
41	NEW YORK UNIVERSITY	South, J. C., Jr.	LARC	Garabedian, P. R.	NGR 33-016-167	2814
41	NEW YORK UNIVERSITY	Maestrello, L.	LARC	Ferri, A.	NGR 33-016-177	2816
41	NEW YORK UNIVERSITY	Dunavant, J. C.	LARC	Zakkay, V.	NGR 33-016-179	2817
41	NEW YORK UNIVERSITY		LARC	Zakkay, V.	NGR 33-016-181	2818
41	NEW YORK UNIVERSITY	Hefner, J. N.	LARC	Ferri, A.	NGR 33-016-193	2819
41	NO CAROLINA STATE U	McLaughlin, M. D.	LARC	Smetana, F. O.	NAS 1-9603	2893
41	NO CAROLINA STATE U	Hamilton, H. H.	LARC	Dejarnette, F. R.	NAS 1-10277	2894
41	NO CAROLINA STATE U	Thomson, R. G.	LARC	Chang, T. S.	NGL 34-002-084	2903
41	NO CAROLINA STATE U	Crane, H. L.	LARC	Smetana, F. O.	NGR 34-002-179	2911
41	NO CAROLINA STATE U	Imig, L. A.	LARC	Fahmy, A. A.	NGR 34-002-180	2912
41	NO CAROLINA STATE U	Hamilton, H. H., II	LARC	Dejaarnette, F. R.	NGR 34-002-193	2915
41	NORTHEASTERN UNIV	Cooper, P. A.	LARC	Rossettos, J. N.	NGR 22-011-073	2386
41	NORTHWESTERN UNIV	Grobman, J. S.	LERC	Kovitz, A. A.	NGR 14-007-114	1900
41	OHIO STATE UNIV	McCroskey, W. J.	ARC	Velkoff, H. R.	NAS 2-6779	2957
41	OHIO STATE UNIV	Naumann, E. C.	LARC	Bailey, C. D.	NGL 36-008-109	2966

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41	OHIO STATE UNIV	Gessow, A.	HQ-RA	Neren, R. M.	NGL 36-008-117	2967
41	OHIO UNIVERSITY	Mace, W. D.	LARC	McFarland, R. H.	NGR 36-009-017	2981
41	OLD DOMINION UNIV	Maynard, J. D.	LARC	Barna, P. S.	NAS 1-9635	3444
41	OLD DOMINION UNIV	Gentry, G. L., Jr.	LARC	Ousterhout, D. S.	NGL 47-003-039	3451
41	OLD DOMINION UNIV	Martin, D. J.	LARC	Roberts, A. S.	NGR 47-003-052	3456
41	PENNSYLVANIA STATE U	Morse, H. A.	ARC	Arndt, R. A.	NAS 2-6312	3064
41	PENNSYLVANIA STATE U	Hubbard, H. H.	LARC	Reethof, G.	NGL 39-009-121	3077
41	PENNSYLVANIA STATE U	Heyson, H. H.	LARC	Eisenhuth, J. J.	NGL 39-009-172	3078
41	PENNSYLVANIA STATE U	Heidmann, M. F.	LERC	Lakshminarayana, B.	NAS 3-17855	3065
41	PENNSYLVANIA STATE U	Britsch, W. R.	LERC	Lakshminarayana, B.	NGL 39-009-007	3072
41	PENNSYLVANIA STATE U	Stone, J. R.	LERC	Arndt, R. E.	NGR 39-009-270	3092
41	PENNSYLVANIA STATE U	Schulherr, R. M.	HQ-MT	Kaplan, M. H.	NGR 39-009-162	3083
41	PENNSYLVANIA STATE U	Wild, J. W.	HQ-MT	Kaplan, M. H.	NGR 39-009-210	3089
41	PRINCETON UNIVERSITY	Gossett, T. D.	ARC	Durbin, E. J.	NAS 2-7187	2627
41	PRINCETON UNIVERSITY	Franklin, J. A.	ARC	Seckel, E.	NAS 2-7350	2628
41	PRINCETON UNIVERSITY	Ormiston, R. A.	ARC	Dowell, E. H.	NAS 2-7615	2629
41	PRINCETON UNIVERSITY	Gaspers, P. A., Jr.	ARC	Dowell, E. H.	NGR 31-001-197	2654
41	PRINCETON UNIVERSITY	Smith, G. A.	ARC	Durbin, E. J.	NGR 31-001-277	2669
41	PRINCETON UNIVERSITY	Strand, L.	JPL	Summerfield, M.	NGL 31-001-109	2640
41	PRINCETON UNIVERSITY	Crane, H. L.	LARC	Seckel, E.	NAS 1-10075	2623
41	PRINCETON UNIVERSITY	Crane, H. L.	LARC	Seckel, E.	NAS 1-11231	2624
41	PRINCETON UNIVERSITY	Hassell, J. L., Jr.	LARC	Seckel, E.	NAS 1-11543	2625
41	PRINCETON UNIVERSITY	Hilton, D. A.	LARC	Hayes, W. D.	NGL 31-001-119	2641
41	PRINCETON UNIVERSITY	Mace, W. D.	LARC	Graham, D.	NGL 31-001-252	2645
41	PRINCETON UNIVERSITY	Maestrello, L.	LARC	Summerfield, M.	NGR 31-001-241	2662
41	PRINCETON UNIVERSITY	Priem, R. J.	LERC	Harrye, D. T.	NGL 31-001-155	2644
41	PRINCETON UNIVERSITY	Lieblein, S.	LERC	Mellor, G. L.	NGR 31-001-074	2648
41	PRINCETON UNIVERSITY	Chamis, C. C.	LERC	Moon, F. C.	NGR 31-001-267	2665
41	PRINCETON UNIVERSITY	Gray, V. H.	LERC	Summerfield, M.	NGR 31-001-307	2670
41	PRINCETON UNIVERSITY	Clever, W. W., III	MSFC	Dowell, E. H.	NAS 8-28577	2635
41	PURDUE UNIVERSITY	Margason, R. J.	LARC	Skifstad, J. G.	NGL 15-005-094	1993
41	PURDUE UNIVERSITY	Landrum, E. J.	LARC	Marshall, F. S.	NGR 15-005-119	2001
41	PURDUE UNIVERSITY	Poferl, D. J.	LERC	Lecuyer, M. R.	NGR 15-005-147	2003
41	PURDUE UNIVERSITY	Anderson, B. H.	LERC	Hoffman, J. D.	NGR 15-005-162	2006
41	RENSSELAER POLY-NY	Elliott, J. R.	LARC	Kaufman, H.	NGR 33-018-183	2838
41	ROSE-HULMAN INST TEC	Gentry, G. L., Jr.	LARC	Roper, A. T.	NGR 15-008-008	2014
41	ST LOUIS UNIVERSITY	Fulton, R. E.	LARC	Rhodes, J. L.	NGL 26-006-021	2549
41	STANFORD UNIVERSITY		ARC		NAS 2-3303	1264
41	STANFORD UNIVERSITY	Yaggy, P. F.	ARC	Bryson, A. E., Jr.	NAS 2-5143	1266
41	STANFORD UNIVERSITY	Vause, C. R.	ARC	Karamcheti, K. K.	NAS 2-6158	1268
41	STANFORD UNIVERSITY	Doolin, B. F.	ARC	Bryson, A. E.	NGL 05-020-007	1298
41	STANFORD UNIVERSITY	Kelley, M.	ARC	Bryson, A. R.	NGR 05-020-526	1339
41	STANFORD UNIVERSITY	Presley, L. L.	ARC	Kruger, C. H.	NGR 05-020-583	1351
41	STANFORD UNIVERSITY	Chapman, D. R.	ARC	Reynolds, W. C.	NGR 05-020-622	1354
41	STANFORD UNIVERSITY	Thomas, C. L.	ARC	Powell, J. D.	NGR 05-020-663	1362
41	STANFORD UNIVERSITY	Kordes, E. E.	FRC	McIntosh, S. C., Jr.	NGL 05-020-498	1319
41	STANFORD UNIVERSITY	Rainey, A. G.	LARC	Ashley, H.	NGL 05-020-243	1310
41	STANFORD UNIVERSITY	Reed, W. H.	LARC	Herrmann, G.	NGL 05-020-397	1316
41	STANFORD UNIVERSITY	Carter, C. H.	HQ-PY	Pettit, J. M.	NGT 05-020-361	1368
41	STEVENS INST OF TECH	Batterson, S. A.	LARC	Ehrlich, I. R.	NAS 1-9349	2679
41	TEXAS A&M UNIVERSITY	Moseley, W. C., Jr.	JSC	Lowy, S. H.	NAS 9-9766	3250
41	TEXAS A&M UNIVERSITY	Moseley, W. C., Jr.	JSC	Cavin, R. K., III	NAS 9-11303	3252
41	TEXAS A&M UNIVERSITY	Jenkins, L. W.	JSC	Norton, D. J.	NAS 9-11658	3253
41	TEXAS A&M UNIVERSITY	Chamis, C. C.	LERC	Thornton, H. R.	NGR 44-001-149	3269
41	TUFTS UNIVERSITY	Soderman, P. T.	ARC	Cole, J.	NGR 22-012-028	2392
41	TUSKEGEE INSTITUTE	Guest, S. H.	MSFC	Lenzo, C. S.	NGR 01-005-010	1032
41	UNIV CALIF-BERKELEY	Kenyon, G. C.	ARC	Horonjeff, R.	NAS 2-6717	1373
41	UNIV CALIF-BERKELEY		ARC	Desoer, C. A.	NGL 05-003-016	1395

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41	UNIV CALIF-BERKELEY	Peterson, V. L.	ARC	Talbot, L.	NGR 05-003-451	1422
41	UNIV CALIF-DAVIS	Yaggy, P. F.	ARC	Draper, H. A.	NAS 2-5668	1443
41	UNIV CALIF-L ANGELES	Peterson, V.	ARC	Cole, J. D.	NGR 05-007-323	1506
41	UNIV CALIF-L ANGELES	Rediess, H. A.	FRC	Balakrishnan, A. V.	NGL 05-007-379	1494
41	UNIV CALIF-L ANGELES	Rediess, H. A.	FRC	Balakrishnan, A. V.	NGR 05-007-122	1496
41	UNIV CALIF-L ANGELES	Fulton, R. E.	LARC	Schmit, L. A.	NGR 05-007-337	1511
41	UNIV CALIF-L ANGELES	Bland, S. R.	LARC	Cole, J. D.	NGR 05-007-395	1516
41	UNIV CALIF-SAN DIEGO		ARC	Libby, P. A.	NGL 05-009-025	1541
41	UNIV CALIF-SAN DIEGO	Nachtsheim, P.	ARC	Libby, P. A.	NGR 05-009-190	1563
41	UNIV CALIF-SAN DIEGO		LARC	Libby, P. A.	NGR 05-009-178	1560
41	UNIV CALIF-S BARBARA	Gloss, B. B.	LARC	Bossel, H. H.	NGR 05-010-025	1576
41	UNIV OF CINCINNATI	Harris, J. E.	LARC	Davis, R. T.	NAS 1-11104	2982
41	UNIV OF CINCINNATI	Queijo, M. J.	LARC	Wells, W. R.	NGR 36-004-061	2988
41	UNIV OF CINCINNATI	Davis, R. C.	LARC	Sobel, L. H.	NGR 36-004-065	2991
41	UNIV OF CINCINNATI	Harris, J. E.	LARC	Davis, R. T.	NGR 36-004-069	2992
41	UNIV OF CINCINNATI	Prust, H. W., Jr.	LERC	Tabakoff, W.	NGR 36-004-064	2990
41	UNIV COLORADO-BOLDR	Deissler, R. G.	LERC	Ubrcio, M. S.	NGR 06-003-208	1673
41	UNIV OF CONNECTICUT	Kurzahls, P. R.	HQ-RE	Lindorff, D. P.	NGL 07-002-002	1699
41	UNIV OF DAYTON	Fichtl, G. H.	MSFC	Engler, N. A.	NAS 8-26600	2994
41	UNIV OF DENVER	Redding, E. R.	HQ-PY	Blackledge, J. P.	NGL 06-004-096	1681
41	UNIV OF FLORIDA	Margason, R. J.	LARC	Fearn, R. L.	NGL 10-005-127	1802
41	UNIV OF FLORIDA		MSFC		NAS 8-26832	1790
41	UNIV ILLINOIS-URBANA	Swann, R. T.	LARC	Clausing, A. M.	NGR 14-005-138	1959
41	UNIV ILLINOIS-URBANA	Morgan, H. L.	LARC	Ormsbee, A. I.	NGR 14-005-144	1960
41	UNIV ILLINOIS-URBANA	Stickle, J. W.	LARC	Ormsbee, A. I.	NGR 14-005-194	1970
41	UNIV ILLINOIS-URBANA	Anderson, B. H.	LERC	Chow, W. L.	NGL 14-005-140	1954
41	UNIV ILLINOIS-URBANA	Karchmer, A. M.	LERC	Jones, B. G.	NGR 14-005-177	1964
41	UNIV ILLINOIS-URBANA	Marek, C. J.	LERC	Strehlow, R. A.	NGR 14-005-193	1969
41	UNIV OF IOWA	Jones, S. L.	GSFC	Van Allen, J. A.	NAS 5-23112	2038
41	UNIV OF KANSAS	Loschke, P. C.	FRC	Roskam, J.	NGR 17-002-095	2065
41	UNIV OF KANSAS	Lamar, J. E.	LARC	Roskam, J.	NGR 17-002-071	2061
41	UNIV OF KANSAS	Crane, H. L.	LARC	Kohlman, D. L.	NGR 17-002-072	2062
41	UNIV OF KANSAS	Walsh, T. M.	LARC	Lenzen, K. H.	NGR 17-002-079	2063
41	UNIV OF KANSAS	Campbell, J. F.	LARC	Lan, C. T.	NGR 17-002-107	2066
41	UNIV OF KANSAS	Pride, R. A.	LARC	Lenzen, K. H.	NGR 17-004-027	2067
41	UNIV MARYLAND-COL PK	Corsiglia, V. R.	ARC	Plotkin, A.	NGR 21-002-266	2171
41	UNIV MARYLAND-COL PK	Chyu, W. J.	ARC	Yang, Y. C.	NGR 21-002-350	2187
41	UNIV MARYLAND-COL PK	Gaspers, P. A.	ARC	Weisshaar, T. A.	NGR 21-002-391	2194
41	UNIV MARYLAND-COL PK	Saunders, J. F.	HQ-MM	Melnik, W. L.	NGR 21-002-003	2158
41	UNIV MD-EASTRN SHORE	Pohly, J. G.	HQ-PY	Nagarajon, N.	NGR 21-119-002	2200
41	UNIV OF MASS-AMHERST	Dittmar, J. H.	LERC	Mani, R.	NGR 22-010-063	2404
41	UNIV MICH-ANN ARBOR		GSFC		NAS 5-23230	2439
41	UNIV MICH-ANN ARBOR	McCarty, J. L.	LARC	Clark, S. R.	NGL 23-005-010	2449
41	UNIV MICH-ANN ARBOR	Czarnecki, K. R.	LARC	Sichel, M.	NGR 23-005-523	2467
41	UNIV MICH-ANN ARBOR	Miller, C. D.	LERC	Clark, S. K.	NGR 23-005-417	2460
41	UNIV MICH-ANN ARBOR	Smith, R. E.	MSFC	McWatters, K. D.	NAS 8-28592	2446
41	UNIV MO-ROLLA	Campbell, R. A.	MSFC	Pazdera, J. S.	NAS 8-28230	2568
41	UNIV OKLAHOMA-NORMAN	Stephens, J. B.	MSFC	Canfield, J. M.	NAS 8-30175	3007
41	UNIV OF SANTA CLARA	Marvin, J. G.	ARC	Owen, F. K.	NGR 05-017-029	1593
41	UNIV OF SANTA CLARA	Hruly, R.	ARC	Dunn, W. R.	NGR 05-017-031	1594
41	UNIV OF SANTA CLARA	Pfyl, F. A.	ARC	Cheng, D. Y.	NGR 05-017-033	1595
41	UNIV OF SOUTHERN CAL	Weinstain, L.	LARC	Laufer, J.	NGR 05-018-140	1612
41	UNIV OF SOUTHERN CAL	Dorsch, R. G.	LERC	Laufer, J.	NAS 3-17857	1600
41	UNIV TENNESSEE-KNOXV	Heyson, H. H.	LARC	Braun, G. W.	NGL 43-001-086	3169
41	UNIV TENNESSEE-KNOXV	Bland, S. R.	LARC	Wu, J. M.	NGR 43-001-102	3171
41	UNIV TENNESSEE-KNOXV	Fetterman, D. E.	LARC	Chaudhuri, S. N.	NGR 43-001-124	3175
41	UNIV TENNESSEE-KNOXV	Ludwig, L. P.	LERC	Milligan, M. W.	NGR 43-001-023	3170
41	UNIV TENNESSEE-KNOXV	Dittmar, J. H.	LERC	Lunsdaine, E.	NGR 43-001-134	3177

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41	UNIV TENNESSEE-KNOXV	Dorsch, R. G.	LERC	Maus, J. R.	NGR 43-001-135	3178
41	UNIV TEXAS-AUSTIN	Dods, J. B., Jr.	ARC	Panton, R. L.	NGR 44-012-221	3346
41	UNIV TEXAS-AUSTIN	Goodrich, W. D.	JSC	Bertin, J. J.	NAS 9-10976	3325
41	UNIV OF TORONTO	Gessow, A.	HQ-RA	French, T. B.	NGL 52-026-001	3615
41	UNIV OF VIRGINIA	Yates, E. C., Jr.	LARC	Haviland, J. K.	NGL 47-005-098	3473
41	UNIV OF VIRGINIA	Rainey, A. G.	LARC	Haviland, J. K.	NGL 47-005-108	3474
41	UNIV OF VIRGINIA	Hamlet, I. L.	LARC	Zapata, R. N.	NGR 47-005-112	3477
41	UNIV OF VIRGINIA	Schoonover, W. E., Jr.	LARC	Kuhlthau, A. R.	NGR 47-005-181	3483
41	UNIV OF VIRGINIA		LARC		NGR 47-005-208	3486
41	UNIV OF WASHINGTON	Kurkowski, R. L.	ARC	Joppa, R. G.	NGR 48-002-085	3539
41	UNIV OF WASHINGTON	Treon, S.	ARC	Russell, D. A.	NGR 48-002-107	3540
41	UNIV OF WASHINGTON	Anderson, A. E.	ARC	Kippenhan, C. J.	NGR 48-002-141	3547
41	UNIV OF WASHINGTON	Hodder, B. K.	ARC	Chalupnik, J. D.	NGR 48-002-144	3549
41	UNIV OF WASHINGTON	Heyson, H. H.	LARC	Joppa, R. G.	NGL 48-002-010	3532
41	UNIV OF WASHINGTON	Heyson, H. H.	LARC	Rae, W. H.	NGL 48-002-035	3533
41	UNIV WISC-MILWAUKEE	Ward, J. F.	LARC	Bratanow, T.	NGR 50-007-001	3600
41	VANDERBILT UNIVERSITY	Dietrich, D. A.	LERC	Tatom, J. W.	NGR 43-002-034	3185
41	VIRGINIA POLY INST	Curry, D. M.	JSC	Lewis, C. H.	NAS 9-12630	3500
41	VIRGINIA POLY INST	Russin, W. R.	LARC	Schetz, J. A.	NAS 1-10233	3494
41	VIRGINIA POLY INST	Swann, R. T.	LARC	Lewis, C. H.	NGR 47-004-070	3504
41	VIRGINIA POLY INST	Nagel, A. L.	LARC	Leach, J. W.	NGR 47-004-089	3507
41	VIRGINIA POLY INST	Martin, D. J.	LARC	Bandy, A. R.	NGR 47-004-090	3508
41	VIRGINIA POLY INST	Beckwith, I. E.	LARC	Schetz, J. A.	NGR 47-004-106	3517
41	VIRGINIA POLY INST	Montgomery, R. C.	LARC	Hasdorff, I.	NGR 47-004-116	3521
41	VIRGINIA STATE COL	Pohly, J. G.	HQ-PY	Agrawal, K. M.	NGR 47-014-005	3524
41	WASHINGTON UNIVERSITY	Ormiston, R. A.	ARC	Hohennemser, K. H.	NAS 2-4151	2573
41	WICHITA STATE UNIV	Lamar, J. E.	LARC	Snyder, M. H.	NGR 17-003-020	2071
42	AUBURN UNIV-AUBURN	Lewallen, J. M.	JSC	Shaw, W. A.	NGR 01-003-008	1024
42	AUBURN UNIV-AUBURN	Hethcoat, J. P.	MSFC	Bennett, A. G.	NAS 8-27664	1018
42	AUBURN UNIV-AUBURN	Waites, H. B.	MSFC	Cochran, J. E.	NAS 8-28110	1020
42	CARNEGIE-MELLON UNIV	Paddack, S. J.	GSFC	Renard, M. L.	NGR 39-087-001	3036
42	CARNEGIE-MELLON UNIV	Paddack, S. J.	GSFC	Renard, M. L.	NGR 39-087-026	3039
42	CITY COLLEGE OF N Y		LERC		NAS 3-6926	2709
42	COLORADO STATE UNIV	Kerslake, W. R.	LERC	Wilbur, P. J.	NGR 06-002-112	1642
42	COLORADO STATE UNIV	Serafini, J. S.	LERC	Wilhelm, H. E.	NGR 06-002-147	1646
42	CORNELL UNIVERSITY	Tarver, P.	HQ-SL	Wehe, R. L.	NASW 2366	2753
42	CORNELL UNIVERSITY	Tarver, P.	HQ-SL	Wehe, R. L.	NSR 33-010-055	2781
42	GEORGIA INST OF TECH	Kerr, J. H.	MSFC	Shackelford, R. G.	NAS 8-27375	1831
42	MASS INST OF TECH	Hrudy, R. J.	ARC	Gilmore, J. P.	NAS 2-7439	2257
42	MASS INST OF TECH	Duck, K. I.	GSFC	Edelbaum, T. E.	NAS 5-21791	2267
42	MASS INST OF TECH	Barbieri, R. W.	GSFC	Markey, W. R.	NGR 22-009-207	2335
42	MASS INST OF TECH	Tribble, E. L., Jr.	JSC	Driscoll, D. C.	NAS 9-4065	2286
42	MASS INST OF TECH	Jones, M. E.	JSC	Sears, N.	NAS 9-8242	2288
42	MASS INST OF TECH	Cox, K. J.	JSC	Sears, N. E.	NAS 9-10268	2290
42	MASS INST OF TECH	Smith, E. E., Jr.	JSC	Olsen, E.	NAS 9-11764	2297
42	MASS INST OF TECH		LARC		NAS 1-10677	2250
42	MASS INST OF TECH		MSFC		NAS 8-2481	2269
42	MASS INST OF TECH		MSFC		NAS 8-27624	2275
42	MASS INST OF TECH		HQ-SS	Biemann, K.	NGR 22-009-102	2334
42	NEW MEX ST U-LAS CR	Yetka, N. D.	ARC	Bumgarner, R. A.	NAS 2-5795	2681
42	NEW MEX ST U-LAS CR		GSFC		NAS 5-9558	2683
42	PRINCETON UNIVERSITY	Barbieri, R. W.	GSFC	Lion, P. M.	NGR 31-001-152	2651
42	PRINCETON UNIVERSITY	Bohon, H. L.	LARC	Dowell, E. H.	NGL 31-001-146	2643
42	PRINCETON UNIVERSITY	Mullin, J. P.	HQ-RP	Jahn, R. G.	NGL 31-001-005	2638
42	PRINCETON UNIVERSITY	Schwenk, F. C.	HQ-NS	Kelly, A. J.	NGR 31-001-230	2660
42	STANFORD UNIVERSITY		ARC		NAS 2-1750	1262
42	STANFORD UNIVERSITY	Oyama, J.	ARC	Bensch, K. G.	NAS 2-6234	1270
42	STANFORD UNIVERSITY	Lidston, J. M.	GSFC	Breakwell, J. V.	NAS 5-21684	1283

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2	STANFORD UNIVERSITY	Farquhar, R. W.	GSFC	Breakwell, J. V.	NAS 5-21714	1284
2	STANFORD UNIVERSITY	Farquhar, R. W.	GSFC	Breakwell, J. V.	NGR 05-020-507	1335
2	STANFORD UNIVERSITY	Barbieri, R. W.	GSFC	Breakwell, J. V.	NGR 05-020-592	1352
2	UNIV ALA-HUNTSVILLE	Smith, R. E.	MSFC	Hermann, R.	NAS 8-28248	1056
2	UNIV ALA-TUSCALOOSA		MSFC		NAS 8-1517	1075
2	UNIV ALA-TUSCALOOSA		MSFC		NAS 8-2571	1076
2	UNIV OF ARIZONA	Mendell, W. W.	JSC	Kuiper, G. P.	NAS 9-12613	1135
2	UNIV OF ARIZONA	Aucermanne, M. J.	HQ-SG	Meinel, A. B.	NASW 2283	1137
2	UNIV CALIF-BERKELEY	Iufer, E. J.	ARC	Morrison, H. F.	NAS 2-6485	1372
2	UNIV OF FLORIDA	Soltis, D. G.	LERC	Walker, R. D.	NGR 10-005-182	1806
2	UNIV OF FLORIDA		MSFC		NAS 8-1523	1788
2	UNIV MARYLAND-COL PK	Ghaffari, A.	GSFC	Richard, J. P.	NGL 21-002-214	2155
2	UNIV N CAR-CHPL HILL		MSFC		NAS 8-20106	2918
2	UNIV OF ROME		HQ-TN		NASW 2135	3623
2	UNIV TENNESSEE-KNOXV	Hady, W. F.	LERC	Milligan, M. W.	NGR 43-001-127	3176
2	UNIV TENNESSEE-KNOXV	Parker, J. R.	MSFC	Hung, J. C.	NAS 8-27296	3159
2	UNIV TEXAS-AUSTIN	Michaels, T. S.	HQ-RE	Tapley, B. D.	NGL 44-012-008	3335
2	UNIV OF VIRGINIA	Redding, E. R.	HQ-PY	Barnes, D. W.	NGL 47-005-014	3470
2	VIRGINIA POLY INST	Fedor, J. V.	GSFC	Meirovitch, L.	NGR 47-004-098	3512
2	VIRGINIA POLY INST	Hrastar, J. A.	GSFC	Meirovitch, L.	NGR 47-004-100	3513
2	VIRGINIA STATE COL	Mehrens, H. E.	LARC	Van Dyke, A.	NGR 47-014-007	3526
3	COLORADO SCH OF MINE	Bannister, T. C.	MSFC	Stermole, F. J.	NAS 8-30511	1621
3	GRAMBLING COLLEGE	Pohly, J. G.	HQ-PY	Sabu, D. D.	NGR 19-011-012	2083
3	ILL INST OF TECH	Ragsdale, R. G.	LERC	Weinstein, H.	NGR 14-004-008	1886
3	PENNSYLVANIA STATE U	Wydeven, T.	ARC	Engel, A. J.	NGR 39-009-123	3081
3	PRAIRIE VIEW A&M COL	Pohly, J. G.	HQ-PY	Sohel, M. S.	NGR 44-033-015	3209
3	PRINCETON UNIVERSITY	Pezdirtz, G. F.	LARC	Gillham, J. K.	NGR 31-001-200	2655
3	PRINCETON UNIVERSITY	McHatton, A. D.	LARC	Gillham, J. K.	NGR 31-001-272	2666
3	RICE UNIVERSITY	Jaax, J. R.	JSC	Davis, S. H.	NAS 9-11827	3217
3	SO UNIV-BATON ROUGE	Pohly, J. G.	HQ-PY	Watson, M. M.	NGR 19-005-008	2109
3	UNIV CALIF-BERKELEY	Wydeven, T. J.	ARC	Bell, A. T.	NGR 05-003-462	1428
3	UNIV CALIF-L ANGELES	McPherson, W.	MSFC	Yue, A. S.	NAS 8-26402	1474
3	UNIV OF CINCINNATI	Price, H. L.	LARC	Chartoff, R. P.	NGR 36-004-063	2989
3	UNIV OF DENVER	Quattrone, P. D.	ARC	Ross, L. W.	NGR 06-004-068	1684
3	UNIV OF FLORIDA	Easter, R. W.	LERC	Walker, R. D., Jr.	NGL 10-005-022	1797
13	UNIV MO-COLUMBIA	Ellis, W. E.	JSC	Winnick, J.	NAS 9-12526	2555
13	UNIV OF SO CAROLINA	Jorolan, A. E.	WTR	Bonnell, R. D.	NAS10-8354	3142
13	WORCESTER POLY INST	Shapira, J.	ARC	Weiss, A. H.	NGR 22-017-024	2410
13	YALE UNIVERSITY	Scott, C. D.	JSC	Rosner, D. E.	NAS 9-13058	1706
14	COLORADO STATE UNIV	Camp, D. W.	MSFC	Cermak, J. E.	NAS 8-29583	1633
14	OLD DOMINION UNIV	Leland, T. J.	LARC	Cheng, R.	NGL 47-003-012	3450
14	UNIV OF HOUSTON	Amesbury, D. A.	JSC	Graff, W. J.	NAS 9-12646	3295
14	UNIV ILLINOIS-URBANA	Bender, M. J.	JSC	Karara, H. M.	NAS 9-12459	1952
15	AMERICAN UNIVERSITY	Long, E. R., Jr.	LARC	Cullen, E.	NGR 09-003-014	1733
15	AUBURN UNIV-AUBURN	Doran, B. J.	MSFC	Nagle, H. T., Jr.	NAS 8-20163	1009
15	AUBURN UNIV-AUBURN	Emens, F. H.	MSFC	Irwin, J. D.	NAS 8-20765	1010
15	AUBURN UNIV-AUBURN	Saunders, G. H.	MSFC	Graf, E. R.	NAS 8-24818	1011
15	AUBURN UNIV-AUBURN	Lowery, D. O.	MSFC	Honnell, M. A.	NAS 8-26193	1013
15	AUBURN UNIV-AUBURN	Polites, M. E.	MSFC	Boland, J. S.	NAS 8-26580	1015
15	AUBURN UNIV-AUBURN	Graves, J. R.	MSFC	Honnell, M. A.	NAS 8-26752	1016
15	AUBURN UNIV-AUBURN	White, J. B.	MSFC	Irwin, J. D.	NAS 8-26930	1017
15	AUBURN UNIV-AUBURN	Borelli, M. T.	MSFC	Russell, D. W.	NAS 8-27827	1019
15	AUBURN UNIV-AUBURN	Vallely, D. P.	MSFC	Phillips, C. L.	NAS 8-28262	1021
15	CAL STATE U-SACRAMEN	Priem, R. J.	LERC	Reardon, F. H.	NGR 05-058-003	1249
15	CARNEGIE-MELLON UNIV	Schaefer, D. H.	GSFC	Lee, S. H.	NGR 39-087-036	3040
15	CARNEGIE-MELLON UNIV	Inman, R. A.	MSFC	Casasent, D.	NAS 8-28737	3034
15	CORNELL UNIVERSITY	Hoffman, L. B.	ARC	Jellnik, F.	NAS 2-5643	2744
15	CORNELL UNIVERSITY	Hughes, W. E.	GSFC	Melisaac, P. R.	NGL 33-010-047	2757

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	ACC NO.
45	DUKE UNIVERSITY	Rodriguez, G. E.	GSFC	Wilson, T. G.	NGL 34-001-001	2887
45	GEORGIA INST OF TECH	Wright, M. I.	KSC	Webb, R. P.	NAS10-8375	1839
45	GEORGIA INST OF TECH	Gilreath, M. C.	LARC	Bomar, S. H., Jr.	NAS 1-11267	1825
45	GEORGIA INST OF TECH	Eskew, M. H.	LARC	Tapia, M. A.	NGR 11-002-158	1850
45	GEORGIA INST OF TECH	Kerr, J. H.	MSFC	Walsh, J. R.	NAS 8-28148	1833
45	GEORGIA INST OF TECH	Kerr, J. H.	MSFC	McSweeney, A.	NAS 8-28215	1834
45	GEORGIA INST OF TECH	Kerr, J. H.	MSFC	Callor, W. R.	NAS 8-28591	1835
45	GEORGIA INST OF TECH	Kerr, J. H.	MSFC	Hart, R. K.	NAS 8-29860	1837
45	HARVARD UNIVERSITY	Lalli, V. R.	LERC	Brockett, R. W.	NGR 22-007-172	2233
45	HOFSTRA UNIVERSITY	Swift, C. T.	LARC	Weissman, R. S.	NGR 33-209-002	2796
45	LAVAL UNIVERSITY	Major, F. G.	GSFC	Vanier, J.	NGR 52-133-001	3613
45	LOWELL TECH INST	Lalli, V. R.	LERC	Burger, P.	NGR 22-018-006	2245
45	MARQUETTE UNIVERSITY	Dodgen, J. A.	LARC	Foudriat, E. C.	NGR 50-001-009	3559
45	MASS INST OF TECH		ARC		NAS 2-7648	2259
45	MASS INST OF TECH	Anliker, J. E.	ARC	Burns, S. K.	NGL 22-009-304	2321
45	MASS INST OF TECH	Flaherty, J. B.	GSFC	Ogletree, E. G.	NAS 5-21917	2268
45	MASS INST OF TECH	Soffen, G. A.	LARC	Shapiro, I. T.	NAS 1-9702	2248
45	MASS INST OF TECH	Whitten, J. B.	LARC	Sheridan, T. B.	NGL 22-009-002	2308
45	MASS INST OF TECH	Fales, C. L.	LARC	Penfield, P.	NGL 22-009-337	2325
45	MASS INST OF TECH	Smolensky, S.	HQ-PA	Zannetos, Z. S.	NGL 22-009-309	2323
45	MISSISSIPPI STATE U	Guynes, B. V.	MSFC	McDaniel, W. L., Jr.	NAS 8-21377	2533
45	NEW MEX ST U-LAS CR	Flowers, J.	GSFC	Snow, L. L.	NAS 5-21432	2684
45	NEW MEX ST U-LAS CR	Arndt, G. D.	JSC	Carden, F. F.	NGR 32-003-037	2692
45	NEW MEX ST U-LAS CR	Schlimmer, G. E.	KSC	Bumgarner, R. A.	NAS10-7399	2689
45	NO CAR A&T STATE U	Pohly, J. G.	HQ-PY	Madan, R. N.	NGR 34-012-003	2891
45	NO CAR A&T STATE U	Pohly, J. G.	HQ-PY	Williams, L.	NGR 34-012-004	2892
45	NO CAROLINA STATE U	Hendricks, H. D.	LARC	Monteith, L. K.	NGR 34-002-172	2908
45	NO CAROLINA STATE U	Croswell, W. F.	LARC	Kauffman, J. F.	NGR 34-002-188	2914
45	NO CAROLINA STATE U	Godlewski, M. P.	LERC	Hauser, J. R.	NGR 34-002-195	2916
45	NORTHEASTERN UNIV	Meyers, I. T.	LERC		NAS12-2053	2381
45	NORTHWESTERN UNIV	Painter, J. H.	LARC	Schaefer, B. M.	NGR 14-007-129	1902
45	OHIO STATE UNIV	Hirschmann, E.	GSFC	Ksienski, A. A.	NGR 36-008-080	2970
45	OHIO STATE UNIV	Croswell, W. F.	LARC	Peters, L.	NAS 1-10040	2955
45	OHIO STATE UNIV	Croswell, W. F.	LARC	Richmond, J. H.	NGL 36-008-138	2968
45	OHIO STATE UNIV	Croswell, W. F.	LARC	Peters, L., Jr.	NGR 36-008-144	2971
45	OHIO STATE UNIV	Painter, J. H.	LARC	Peake, W. H.	NGR 36-008-169	2975
45	OHIO STATE UNIV	Croswell, W. F.	LARC	Peters, L., Jr.	NGR 36-008-177	2976
45	OHIO STATE UNIV		HQ-RE	Peters, H. J.	NASR 141	2962
45	OKLAHOMA STATE UNIV	Moul, M. T.	LARC	Rhoten, R. P.	NGR 37-002-096	3002
45	POLY INST BROOKLYN	Brown, J. P.	GSFC	Pickholtz, R. L.	NGL 33-006-020	2823
45	PRINCETON UNIVERSITY		GSFC		NAS 5-23254	2631
45	PRINCETON UNIVERSITY	Bordelon, C. S.	MSFC	Danielson, R. E.	NAS 8-29239	2636
45	PURDUE UNIVERSITY	Lynch, T. J.	GSFC	Wintz, P. A.	NGR 15-005-106	2000
45	PURDUE UNIVERSITY	Alford, W. L.	GSFC	Wintz, P. A.	NGR 15-005-152	2004
45	RICE UNIVERSITY	Youngblood, J. L.	JSC	Tittel, F. K.	NGR 44-006-170	3230
45	SOUTHEASTN MASS UNIV	Kutz, R. L.	GSFC	Chen, C. H.	NGR 22-031-002	2390
45	SOUTHERN METHODIST U	Brown, J. P.	GSFC	Gupta, S. C.	NGR 44-007-037	3236
45	SOUTHERN METHODIST U	Bracalente, E. M.	LARC	Gupta, S. C.	NGR 44-007-049	3237
45	STANFORD UNIVERSITY	Donaldson, R. W.	ARC	Wise, K. D.	NAS 2-6491	1272
45	STANFORD UNIVERSITY	Anliker, J. E.	ARC	Lai, D. C.	NGR 05-020-575	1347
45	STANFORD UNIVERSITY	Lumb, D. R.	ARC	Lusignan, B. B.	NGR 05-020-659	1360
45	STANFORD UNIVERSITY	Baker, J.	GSFC	Villard, O. G.	NAS 5-10102	1281
45	STANFORD UNIVERSITY	Soffen, G. A.	LARC	Tyler, G. L.	NAS 1-9701	1260
45	STANFORD UNIVERSITY	Alexovich, R.	LERC	Lusignan, B. B.	NAS 3-14362	1279
45	STATE UNIV NY-BUFFAL	Weber, F. H.	MSFC	Schmitt, E.	NAS 8-28264	2841
45	TEXAS A&M UNIVERSITY	Arndt, G. D.	JSC	Haden, C. R.	NAS 9-9285	3249
45	TEXAS A&M UNIVERSITY	Walsh, T. M.	LARC	Rouse, J. W., Jr.	NAS 1-11276	3241
45	TEXAS TECH UNIV	Day, J. L.	JSC	Portnoy, W. M.	NAS 9-11162	3276

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45	TUSKEGEE INSTITUTE	Pohly, J. G.	HQ-PY	Terrill, G. R.	NGR 01-005-012	1033
45	UNIV ALA-TUSCALOOSA	Emens, F. H.	MSFC	Houts, R. C.	NAS 8-20172	1078
45	UNIV ALA-TUSCALOOSA	Randall, J. L.	MSFC	Webb, W. E.	NAS 8-25562	1079
45	UNIV ALA-TUSCALOOSA	Durrett, R. H.	MSFC	Dudgeon, J. E.	NAS 8-29953	1087
45	UNIV ALASKA-FAIRBNKS	Trichel, M. C.	JSC	Davis, T. N.	NAS 9-11329	1097
45	UNIV OF ARIZONA	Schwenk, F. C.	HQ-NS	Schultz, D. G.	NGL 03-002-006	1139
45	UNIV CALIF-BERKELEY	Wales, R.	GSFC	Mozer, F. S.	NAS 5-10362	1377
45	UNIV CALIF-BERKELEY	Lynch, T. J.	GSFC	Algazi, V. R.	NGR 05-003-143	1408
45	UNIV CALIF-BERKELEY	Lynch, T. J.	GSFC	Algazi, V. R.	NGR 05-003-538	1438
45	UNIV CALIF-L ANGELES	Kutz, R.	GSFC	Balakrishnan, A. V.	NAS 5-10167	1472
45	UNIV COLORADO-BOLDR	Lehmann, J.	HQ-ER	Baird, J. R.	NGR 06-003-160	1663
45	UNIV OF HOUSTON	Moorehead, R. W.	JSC	Shehadeh, N. M.	NAS 9-9270	3286
45	UNIV OF HOUSTON	Eggers, D. S.	JSC	Hayre, H. S.	NAS 9-9851	3287
45	UNIV OF HOUSTON	Arndt, G. D.	JSC	Simpson, R. S.	NAS 9-11845	3291
45	UNIV ILLINOIS-URBANA	Golden, T. S.	GSFC	Yeh, K. C.	NGR 14-005-189	1967
45	UNIV OF KANSAS	Potter, A. E.	JSC	Moore, R. K.	NAS 9-10261	2051
45	UNIV MARYLAND-COL PK	Schaefer, D. H.	GSFC	Rao, T. R.	NGR 21-002-229	2170
45	UNIV MARYLAND-COL PK	Hurt, C. R.	GSFC	Hochuli, U. E.	NGR 21-002-345	2186
45	UNIV MARYLAND-COL PK	Pease, P. B.	GSFC	Pugsley, J. H.	NGR 21-002-355	2189
45	UNIV OF MASS-AMHERST	Rolinski, A. J.	GSFC	Monopoli, R. V.	NGL 22-010-018	2396
45	UNIV MICH-ANN ARBOR		GSFC		NAS 5-23267	2440
45	UNIV MICH-ANN ARBOR	Hughes, W. E.	GSFC	Haddad, G. I.	NGL 23-005-183	2450
45	UNIV MICH-ANN ARBOR	Bavuso, S. J.	LARC	Meyer, J. F.	NGR 23-005-463	2462
45	UNIV MICH-ANN ARBOR	Croswell, W. F.	LARC	Tai, C. T.	NGR 23-005-477	2465
45	UNIV MO-ROLLA	Deerkoski, L. F.	GSFC	Ziemer, R. E.	NAS 5-20282	2567
45	UNIV NEW HAMPSHIRE		GSFC		NAS 5-23263	2612
45	UNIV OF NOTRE DAME	Rochelle, R. W.	GSFC	Massey, J. L.	NGL 15-004-026	2017
45	UNIV OF NOTRE DAME	Fripp, A. L.	LARC	Gajda, W. J., Jr.	NAS 1-12468	2015
45	UNIV OF RHODE ISLAND	Hallam, K. L.	GSFC	Nudelman, S.	NAS 5-21555	3132
45	UNIV OF RHODE ISLAND	Lehmann, J.	HQ-ER	Sadasiv, G.	NGR 40-004-022	3133
45	UNIV OF SO CAROLINA	Lowery, D. O.	MSFC	Fellers, R. G.	NAS 8-28660	3141
45	UNIV OF SOUTHERN CAL	Kutz, R. L.	GSFC	Davisson, L. D.	NAS 5-21505	1601
45	UNIV OF SOUTHERN CAL	Kutz, R. L.	GSFC	Davisson, L. D.	NGL 05-018-118	1609
45	UNIV TENNESSEE-KNOXV	Ellsworth, J. D.	MSFC	Hung, J. C.	NAS 8-28251	3161
45	UNIV TENNESSEE-KNOXV	Borelli, M. T.	MSFC	Gonzalez, R. C.	NAS 8-29271	3162
45	UNIV TEXAS-AUSTIN	Ippolito, L. J.	GSFC	Straiton, A. W.	NAS 5-10387	3322
45	UNIV TEXAS-AUSTIN	Brunk, W. E.	HQ-SL	Cogdell, J. R.	NGL 44-012-006	3334
45	UNIV OF VIRGINIA	Kelly, W. L.	LARC	White, E. J.	NAS 1-10210	3466
45	UNIV WISC-MADISON	Sandler, H.	ARC	Weber, J. C.	NGR 50-002-204	3597
45	VIRGINIA POLY INST	Hirschmann, E.	GSFC	Bostian, C. W.	NGR 47-004-091	3509
45	VIRGINIA POLY INST	Dod, L. R.	GSFC	Galindo, V.	NGR 47-004-102	3515
45	VIRGINIA POLY INST	Dod, L. R.	GSFC	Stutzman, W. L.	NGR 47-004-103	3516
45	WEST VIRGINIA UNIV	Johnson, J. W.	LARC	Balanis, C. A.	NGR 49-001-056	3557
45	YALE UNIVERSITY	Schaefer, D. H.	GSFC	Barker, R. C.	NGL 07-004-005	1707
45	YOUNGSTOWN STATE U	Holmes, H. K.	LARC	Zuckerwar, A. J.	NGR 36-028-004	2998
46	ALABAMA A&M UNIV	Pohly, J. G.	HQ-PY	Weathers, G. D.	NGR 01-001-021	1006
46	BROWN UNIVERSITY	Misencik, J. A.	LERC	Mylonas, C.	NGL 40-002-080	3125
46	CALIF INST OF TECH	Evvard, J. C.	LERC	Rannje, W. D.	NGL 05-002-136	1203
46	CALIF INST OF TECH	Gross, L. A.	MSFC	Acosta, A. J.	NAS 8-28046	1187
46	CALIF INST OF TECH	Gross, L. A.	MSFC	Acosta, A. T.	NAS 8-29313	1189
46	CAL STATE U-NRTHRDE	Scibbe, H. W.	LERC	Nypan, L. J.	NGR 05-062-002	1248
46	CARNEGIE-MELLON UNIV	McComb, H. M.	LARC	Swedlow, J. L.	NGL 39-002-023	3035
46	CASE WESTERN RESERVE	Evvard, J. C.	LERC	Reshotko, E.	NGL 36-003-064	2930
46	COLORADO STATE UNIV	Kirkpatrick, J. P.	ARC	Jones, T. B.	NGR 06-002-127	1644
46	COLORADO STATE UNIV	Misencik, J. A.	LERC	Smith, F. W.	NGL 06-002-063	1636
46	COLORADO STATE UNIV	Priem, R. J.	LERC	Mitchell, C. E.	NGR 06-002-095	1639
46	COLORADO STATE UNIV	Miller, C.	MSFC	Childs, D. W.	NAS 8-26551	1630
46	CORNELL UNIVERSITY	Evvard, J. C.	LERC	Moore, F. K.	NGL 33-010-042	2756

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46	DREXEL UNIVERSITY	Thomson, R. G.	LARC	Mortimer, R. W.	NGR 39-004-041	3047
46	GEORGIA INST OF TECH	Simon, W. E.	JSC	Black, W. Z.	NAS 9-10415	1838
46	GEORGIA INST OF TECH	Jones, W. R., Jr.	LERC	Winer, W. O.	NAS 3-15383	1827
46	GEORGIA INST OF TECH	Priem, R. J.	LERC	Zinn, B. T.	NGL 11-002-085	1843
46	HARVARD UNIVERSITY	McCombjr, H. G.	LARC	Budiansky, B.	NGL 22-007-012	2223
46	LEHIGH UNIVERSITY	Fichter, W. B.	LARC	Sih, G. C.	NGR 39-007-066	3060
46	MASS INST OF TECH	Poorman, R. M.	MSFC	Masubuchi, K.	NAS 8-24365	2271
46	MASS INST OF TECH	Counter, D. N.	MSFC	Sheridan, T. B.	NAS 8-28055	2279
46	MASS INST OF TECH	Hoppes, R. V.	MSFC	Masubuchi, K.	NAS 8-28732	2283
46	MASS INST OF TECH	Clarke, W. D.	MSFC	Soosar, K.	NAS 8-29187	2284
46	MASS INST OF TECH	Thornton, W. G.	MSFC	Woodin, A.	NAS 8-29724	2285
46	MASS INST OF TECH	Miller, D. J.	HQ-NS	Sheridan, T. B.	NGR 22-009-658	2361
46	MICHIGAN STATE UNIV	Albers, J. A.	LERC	Foss, J. F.	NGR 23-004-068	2417
46	MISSISSIPPI STATE U	Fleming, D. P.	LERC	Stiffler, A. K.	NGR 25-001-050	2542
46	NEW YORK UNIVERSITY	Roudebush, W. H.	HQ-RA	Haydysh, W. E.	NGL 33-016-149	2811
46	NORTHEASTERN UNIV	Gavigan, F. X.	HQ-NS	Nowak, W. B.	NGR 22-011-077	2387
46	NORTHWESTERN UNIV	Zaretsky, E. V.	LERC	Ching, H. S.	NGR 14-007-084	1899
46	OLD DOMINION UNIV	French, B. O.	JSC	Keshock, E. G.	NAS 9-13410	3447
46	OLD DOMINION UNIV	Hellbaum, R. F.	LARC	Goglia, G. L.	NGL 47-003-007	3448
46	PENNSYLVANIA STATE U	Bement, L. J.	LARC	Neubert, V. H.	NAS 1-12045	3063
46	PENNSYLVANIA STATE U	Schoonover, W. E., Jr.	LARC	Park, W. H.	NGR 39-009-256	3091
46	PENNSYLVANIA STATE U	Priem, R. J.	LERC	Faeth, G. M.	NGR 39-009-077	3080
46	PENNSYLVANIA STATE U	Compitello, F.	HQ-RP	Lakshminarayana, B.	NSR 39-009-135	3095
46	PRAIRIE VIEW A&M COL	Pohly, J. G.	HQ-PY	Yeh, H. Y.	NGR 44-033-016	3210
46	PURDUE UNIVERSITY	Priem, R. J.	LERC	Ehresman, C. M.	NGR 15-005-058	1998
46	PURDUE UNIVERSITY	Mark, C. P.	HQ-RV	Dewitt, D. P.	NSR 15-005-037	2012
46	ROSE-HULMAN INST TEC	Dietrich, M. W.	LERC	Coy, J. J.	NAS 3-17357	2013
46	STANFORD UNIVERSITY	Fryer, T. B.	ARC	Angell, J. B.	NGL 05-020-401	1317
46	STANFORD UNIVERSITY	Chapman, D. R.	ARC	Ferziger, J.	NGL 05-020-420	1318
46	STANFORD UNIVERSITY	Colladay, R. S.	LERC	Kays, W. M.	NAS 3-14336	1278
46	STANFORD UNIVERSITY	Graham, R. W.	LERC	Kays, W. M.	NGL 05-020-134	1304
46	TENNESSEE TECH U	Priem, R. J.	LERC	Purdy, K. R.	NGR 43-003-015	3154
46	TULANE UNIVERSITY	Priem, R. J.	LERC	O'Hara, J. C.	NGR 19-002-030	2115
46	TUSKEGEE INSTITUTE	Fedderson, W. E.	JSC	Sellers, J. P.	NGR 01-005-017	1034
46	UNIV ALA-HUNTSVILLE	Wilhold, G. A.	MSFC	Shih, C. C.	NAS 8-28249	1057
46	UNIV ALA-HUNTSVILLE	Jones, J. H.	MSFC	Pao, S. P.	NAS 8-28588	1061
46	UNIV ALA-HUNTSVILLE	Allums, S. L.	MSFC	Shih, C. C.	NAS 8-28736	1062
46	UNIV ALA-HUNTSVILLE	Reed, T. G.	MSFC	Shih, C. C.	NAS 8-30159	1070
46	UNIV ALA-TUSCALOOSA	Guest, S. H.	MSFC	Doughty, J. O.	NAS 8-28180	1082
46	UNIV CALIF-DAVIS	Corliss, L.	ARC	Hoffman, M. S.	NGR 05-004-051	1460
46	UNIV CALIF-S BARBARA	Lancaster, E. R.	GSFC	Mitchell, T. P.	NGL 05-010-020	1575
46	UNIV OF CINCINNATI	Stewart, W. L.	LERC	Tabakoff, W.	NGR 36-004-055	2986
46	UNIV ILLINOIS-URBANA	Dorsch, R. G.	LERC	Jones, B. G.	NGR 14-005-149	1961
46	UNIV OF KENTUCKY	Hoffler, G. W.	JSC	Carter, W. M.	NAS 9-12749	2072
46	UNIV MARYLAND-COL PK	Laurence, J. C.	LERC	Spain, I.	NGR 21-002-400	2196
46	UNIV OF MASS-AMHERST	Patterson, J. W.	MSFC	Crossley, F. R.	NAS 8-29073	2395
46	UNIV MICH-ANN ARBOR	Fichter, W. B.	LARC	Atkins, A. G.	NGR 23-005-528	2468
46	UNIV MICH-ANN ARBOR	Priem, R. J.	LERC	Nicholls, J. A.	NGL 23-005-336	2452
46	UNIV MICH-ANN ARBOR	Priem, R. J.	LERC	Nicholls, J. A.	NGR 23-005-536	2469
46	UNIV MO-COLUMBIA	Eandi, B. K.	JSC	Winnick, J.	NGR 26-004-098	2561
46	UNIV MO-ROLLA	Chambers, A. B.	ARC	Miles, J. B.	NGR 26-004-097	2572
46	UNIV OF NEW MEXICO	Hellbaum, R. F.	LARC	Richards, C. G.	NGR 32-004-026	2703
46	UNIV OF NOTRE DAME	Gross, K. W.	MSFC	Mueller, T. J.	NAS 8-25601	2016
46	UNIV OF SANTA CLARA	Stine, H.	ARC	Cheng, D. Y.	NGR 05-017-019	1589
46	UNIV OF SANTA CLARA	Chisel, D.	ARC	Ian, M. R.	NGR 05-017-023	1590
46	UNIV OF SO ALABAMA	Larson, P. A.	MSFC	Elliott, J. M.	NAS 8-28722	1092
46	UNIV TENNESSEE-KNOXV	Fichtl, G. H.	MSFC	Frost, W.	NAS 8-27387	3160
46	UNIV TENNESSEE-KNOXV	Fichtl, G. H.	MSFC	Frost, W.	NAS 8-29584	3163

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	ACC NO.
46	UNIV TENNESSEE-KNOXV	Ellsworth, J. D.	MSFC	Hung, J. C.	NAS 8-29632	3164
46	UNIV TEXAS-AUSTIN	Goodrich, W. D.	JSC	Bertin, J. J.	NAS 9-11082	3326
46	UNIV OF UTAH	Wasel, R. A.	HQ-RP	Devires, K. L.	NGL 45-003-037	3420
46	UNIV OF VIRGINIA	Sewall, J. L.	LARC	Pilkey, W. D.	NGR 47-005-145	3478
46	UNIV OF VIRGINIA	Cunningham, R. E.	LERC	Gunter, E. J.	NGL 47-005-050	3471
46	UNIV WISC-MADISON	Hoppes, R. V.	MSFC	Adams, C. M.	NAS 8-28733	3575
46	VIRGINIA POLY INST	Newman, J. C., Jr.	LARC	Smith, C. W.	NGR 47-004-076	3505
47	CARNEGIE-MELLON UNIV	Brown, W. F., Jr.	LERC	Low, J. R.	NGR 39-087-003	3037
47	CARNEGIE-MELLON UNIV	Misencik, J. A.	LERC	Low, J. R., Jr.	NGR 39-087-047	3042
47	CASE WESTERN RESERVE	Quatinetz, M.	LERC	Ebert, L. B.	NGL 36-003-094	2931
47	CASE WESTERN RESERVE	Ashbrook, R. L.	LERC	Wallace, J. F.	NGR 36-027-035	2939
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Troiano, A. R.	NGR 36-027-040	2941
47	CASE WESTERN RESERVE	Gray, H. R.	LERC	Hehemann, R. H.	NGR 36-027-051	2944
47	GEORGE WASHINGTON U	Martin, D. J.	LARC	Liebowitz, H.	NGL 09-010-053	1754
47	GEORGIA INST OF TECH	Hasemeyer, E. A.	MSFC	Brown, J. L.	NAS 8-28735	1836
47	KENT STATE UNIV		HQ-RR	Brown, G. H.	NSR 36-007-013	2954
47	LEHIGH UNIVERSITY	Newman, J. C., Jr.	LARC	Wei, R. P.	NGL 39-007-040	3054
47	LEHIGH UNIVERSITY	Ashbrook, R. L.	LERC	Kraft, R. W.	NGL 39-007-007	3053
47	LEHIGH UNIVERSITY	Misencik, J. A.	LERC	Wei, R. P.	NGR 39-007-067	3061
47	MASS INST OF TECH	Harris, J. W.	JSC	Uhlmann, D. R.	NGR 22-009-646	2360
47	MASS INST OF TECH	Quatinetz, M.	LERC	Grant, N. J.	NGL 22-009-003	2309
47	MASS INST OF TECH	Snyder, R. S.	MSFC	Gatos, H. C.	NAS 8-28189	2280
47	NO CAROLINA STATE U	Williams, D. P.	ARC	Benson, R. B.	NGR 34-002-175	2909
47	NO CAROLINA STATE U	Buckley, J. D.	LARC	Manning, C. R.	NGR 34-002-108	2906
47	OHIO STATE UNIV	Gray, H.	LERC	Beck, F. H.	NGL 36-008-051	2964
47	PENNSYLVANIA STATE U	Hirschberg, M. H.	LERC	Zamrik, S. Y.	NGR 39-009-034	3079
47	PRAIRIE VIEW A&M COL	Lewallen, J. M.	JSC	Yeh, H. Y.	NGR 44-033-002	3207
47	PURDUE UNIVERSITY	Howe, J. T.	ARC	Dewitt, D. P.	NAS 2-6802	1984
47	RENSSELAER POLY-NY	Lad, R. A.	LERC	Wiberly, S. E.	NGL 33-018-003	2832
47	RENSSELAER POLY-NY	Miller, C. D.	LERC	Ling, F. F.	NGR 33-018-152	2837
47	RICE UNIVERSITY	Youngblood, J. L.	JSC	Rabson, T. A.	NGR 44-006-148	3227
47	RICE UNIVERSITY	Lad, R. A.	LERC	Rorschach, H. E.	NGL 44-006-001	3220
47	SOUTHERN METHODIST U	Fripp, A. L.	LARC	Chu, T. L.	NAS 1-11869	3232
47	SOUTHERN METHODIST U	Breckenridge, R. A.	LARC	Chu, T. L.	NGL 44-007-042	3234
47	SOUTHERN METHODIST U	Breckenridge, R. A.	LARC	Chu, T. L.	NGR 44-007-052	3238
47	STANFORD UNIVERSITY	Nelson, H. G.	ARC	Tiller, W. A.	NGR 05-020-549	1344
47	STANFORD UNIVERSITY	Williams, D. P.	ARC	Barnett, D. M.	NGR 05-020-662	1361
47	STANFORD UNIVERSITY	Whittenberger, J. D.	LERC	Sherby, O. D.	NGR 05-020-671	1363
47	STATE U NY-STONY BRK	Lad, R. A.	LERC	Seigle, L. L.	NGL 33-015-035	2851
47	STATE U NY-STONY BRK	Levine, S. R.	LERC	Seigle, L. L.	NGR 33-015-160	2864
47	SYRACUSE UNIVERSITY	Johnson, R. L.	LERC	Keller, D. V.	NGL 33-022-108	2873
47	UNIV ALA-HUNTSVILLE	Kroes, R.	MSFC	Davis, J. H.	NAS 8-25120	1042
47	UNIV ALA-HUNTSVILLE	Reese, O. Y.	MSFC	Roy, U.	NAS 8-26991	1048
47	UNIV ALA-HUNTSVILLE	Boese, A.	MSFC	Walter, H.	NAS 8-28112	1055
47	UNIV ALA-HUNTSVILLE	Davidson, M. C.	MSFC	Castle, J. G.	NAS 8-29542	1067
47	UNIV CALIF-L ANGELES	Gilbreath, W. P.	ARC	Douglass, D. L.	NGR 05-007-352	1514
47	UNIV CALIF-L ANGELES	Johnson, R. L.	LERC	Amstutz, H. C.	NGL 05-007-338	1492
47	UNIV OF CINCINNATI	Olson, W. T.	LERC	Harness, D.	NGR 36-004-056	2987
47	UNIV OF CONNECTICUT	Hasemeyer, E. A.	MSFC	Katahis, T. Z.	NAS 8-28734	1693
47	UNIV OF DENVER	Reece, O. Y.	MSFC	Otto, H. E.	NAS 8-27277	1676
47	UNIV OF FLORIDA	Lad, R. A.	LERC	Hren, J. J.	NGL 10-005-039	1798
47	UNIV OF FLORIDA	Lad, R. A.	LERC	Hummel, R. E.	NGL 10-005-080	1800
47	UNIV OF KENTUCKY	Sanders, W. A.	LERC	Leipold, M. H.	NGL 18-001-042	2074
47	UNIV MARYLAND-COL PK	Centolanzi, F. J.	ARC	Yang, J. C.	NGR 21-002-335	2184
47	UNIV MICH-ANN ARBOR	Freche, J. C.	LERC	Wilson, D. J.	NGL 23-005-005	2448
47	U MINN-MNPLS-ST PAUL	Stepka, F. S.	LERC	Eckert, E. R.	NAS 3-13200	2493
47	UNIV OF PITTSBURGH	Stephens, J. R.	LERC	Meier, G. H.	NGR 39-011-164	3117
47	UNIV OF TULSA	Howe, J. T.	ARC	Weston, K. C.	NGR 37-008-003	3010

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47	UNIV OF WASHINGTON	Goldstein, H. E.	ARC	Mueller, J. I.	NAS 2-6541	3528
47	UNIV OF WASHINGTON	Heyson, H. H.	LARC	Fischbach, D. B.	NGR 48-002-129	3542
47	UNIV OF WASHINGTON	Lad, R. A.	LERC	Mueller, J. I.	NGL 48-002-004	3531
47	UNIV WISC-MADISON	Barrett, C. A.	LERC	Beyer, J. B.	NAS 3-15085	3564
47	UNIV WISC-MADISON	Laurence, J. C.	LERC	Boom, R. W.	NGR 50-002-116	3586
47	VANDERBILT UNIVERSITY	Allen, R. V.	MSFC	Kinser, D. L.	NAS 8-29460	3182
47	VIRGINIA POLY INST	Herring, H. W.	LARC	Tenney, D. R.	NGR 47-004-082	3506
47	VIRGINIA POLY INST	Herring, H. W.	LARC	Tenney, D. R.	NGR 47-004-097	3511
47	VIRGINIA POLY INST	Davis, J. G., Jr.	LARC	Herakovich, C. T.	NGR 47-004-101	3514
47	VIRGINIA POLY INST	Herring, H. W.	LARC	Lytton, J. L.	NGR 47-004-108	3518
49	AUBURN UNIV-AUBURN	Ellsworth, T. D.	MSFC	Boland, J. S., III	NAS 8-29852	1023
49	AUBURN UNIV-AUBURN	Carter, C. H.	HQ-PY	Vachon, R. I.	NGT 01-003-044	1027
49	AUBURN UNIV-AUBURN	Carter, C. H.	HQ-PY	O'Brien, J. F.	NGT 01-003-045	1028
49	BUCKNELL UNIVERSITY	Scasholtz, R. G.	LERC	Maxwell, B. R.	NGR 39-027-002	3033
49	CAL STATE U-CHICO	Townsend, D. P.	LERC	Allen, C. W.	NAS 3-12426	1239
49	CASE WESTERN RESERVE	Usher, R. J.	LERC	Boltz, R. E.	NGR 36-027-047	2942
49	CASE WESTERN RESERVE	Carter, C. H.	HQ-PY	Prahl, J. M.	NGT 36-027-011	2948
49	CATHOLIC UNIVERSITY	Carter, C. H.	HQ-PY	Fang, B. T.	NGT 09-005-093	1743
49	CITY COLLEGE OF N Y	Batson, B. H.	JSC	Schilling, D. L.	NGR 33-013-063	2715
49	COLORADO STATE UNIV	Wempe, T. E.	ARC	Cermak, J. E.	NAS 2-7396	1627
49	CORNELL UNIVERSITY	Hrastar, J. A.	GSFC	Alfriend, K. T.	NGR 33-010-169	2775
49	CORNELL UNIVERSITY	Vitale, J. A.	HQ-PY	McHanus, H. N.	NGR 33-010-071	2765
49	DREXEL UNIVERSITY	Long, W. C.	LARC	Matcovich, T. J.	NGR 39-004-038	3046
49	GEORGE WASHINGTON U	Moore, J. V.	GSFC	Kahn, W. K.	NGR 09-010-090	1761
49	GEORGIA INST OF TECH	Jones, W. R., Jr.	LERC	Winer, W. O.	NGR 11-002-133	1846
49	GEORGIA INST OF TECH	Kascak, A. F.	LERC	Kallfelz, J. M.	NGR 11-002-145	1847
49	GEORGIA INST OF TECH	Masser, C. C.	LERC	Williams, J. R.	NGR 11-002-146	1848
49	GEORGIA INST OF TECH	Kascak, A. F.	LERC	Clement, J. D.	NGR 11-002-166	1852
49	LAMAR UNIVERSITY	Lewallen, J. M.	JSC	Cherry, L. B.	NGR 44-029-003	3205
49	LA STATE U-BAT ROUGE	Anderson, G. Y.	LARC	Groves, F. R.	NAS 1-10341	2087
49	LA STATE U-BAT ROUGE	Swann, R. T.	LARC	Pike, R. W.	NGL 19-001-059	2095
49	LA STATE U-BAT ROUGE	Johnson, D. L.	LARC	Whitehurst, C. A.	NGL 19-001-068	2096
49	LA STATE U-BAT ROUGE	Quinn, H. B.	HQ-PY	Whitehurst, C. A.	NGL 19-001-024	2094
49	MASS INST OF TECH	Doolin, B. F.	ARC	Newton, G. C., Jr.	NGL 22-009-124	2317
49	MASS INST OF TECH	Hasemyer, E. A.	MSFC	Masubuchi, K.	NAS 8-24364	2270
49	MASS INST OF TECH	Jones, C. S.	MSFC	Gilmore, J. P.	NAS12-2033	2306
49	MASS INST OF TECH		NSO-N		SNPN-54	2380
49	MASS INST OF TECH	Michaels, T. S.	HQ-RE	Markey, W. R.	NGL 22-009-010	2310
49	MISSISSIPPI STATE U	Hollis, B. R., Jr.	MSFC	Gassaway, J. D.	NAS 8-26749	2534
49	NAT POLYTECHNIC INST	McKeehan, H. B.	GSFC	Orellana, J. R.	NAS 5-21224	3617
49	NEW MEX ST U-LAS CR	Van Ness, J. C.	ARC	Lawrence, H. R.	NAS 2-6484	2682
49	NEW MEX ST U-LAS CR	Lantz, P. A.	GSFC	Sayles, A., Jr.	NAS 5-22203	2686
49	NEW MEX ST U-LAS CR	Oosterhout, J.	GSFC	Sayles, A., Jr.	NAS 5-22219	2687
49	NO CAROLINA STATE U	Cawthorn, J. M.	LARC	Pearson, R. G.	NGL 34-002-055	2902
49	NO CAROLINA STATE U	Carter, C. H.	HQ-PY	Hart, F.	NGT 34-002-097	2917
49	OHIO STATE UNIV	Lester, H. C.	LARC	Bailey, C. D.	NGR 36-008-197	2978
49	OLD DOMINION UNIV	Royall, J. F.	LARC	Hill, H.	NAS 1-11707	3445
49	OLD DOMINION UNIV	Carter, C. H.	IIQ-PY	Goglia, G. L.	NGT 47-003-028	3464
49	OLD DOMINION UNIV	Carter, C. H.	HQ-PY	Goglia, G. L.	NGT 47-003-029	3465
49	PENNSYLVANIA STATE U	Janow, C.	HQ-RE	Shearer, J. L.	NGL 39-009-023	3075
49	PURDUE UNIVERSITY	Gregory, T. J.	ARC	Garrett, R. E.	NGR 15-005-180	2009
49	PURDUE UNIVERSITY	Moss, J. D.	MSFC	Schoenhals, R. J.	NAS 8-24015	1988
49	PURDUE UNIVERSITY	Vitale, J. A.	HQ-PY	Modrey, J.	NGR 15-005-069	1999
49	RENSSELAER POLY-NY	Tarver, P.	HQ-SL	Yerazunis, S. W.	NGL 33-018-091	2835
49	SO DAKOTA STATE UNIV	Vitale, J. A.	HQ-PY	Myers, V. I.	NGL 42-003-007	3151
49	STANFORD UNIVERSITY	Kenyon, G. C.	ARC	Shevill, R. S.	NAS 2-7199	1275
49	STANFORD UNIVERSITY	Jones, J. L.	ARC	Adams, J. L.	NGR 05-020-345	1329
49	STANFORD UNIVERSITY	Carter, C. H.	HQ-PY	Adams, J. L.	NGT 05-020-409	1369

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49	STANFORD UNIVERSITY	Carter, C. H.	HQ-PY	Bershader, D.	NGT 05-020-412	1370
49	STANFORD UNIVERSITY	Janow, C.	HQ-RE	Kalman, R. E.	NGL 05-020-073	1302
49	SWARTHMORE COLLEGE	Rasdall, J. L.	MSFC	Schutz, V. K.	NAS 8-26927	3096
49	TEXAS A&M UNIVERSITY	Cour-Palais, B. G.	JSC	Rodenberger, C. A.	NGR 44-001-106	3266
49	UNIV ALA-HUNTSVILLE	Devries, L. L.	MSFC	Wu, S. T.	NAS 8-25750	1043
49	UNIV ALA-HUNTSVILLE	Smith, R. E.	MSFC	Rao, G. L.	NAS 8-29317	1065
49	UNIV ALA-TUSCALOOSA	Clarke, W. D.	MSFC	Hill, J. L.	NAS 8-28019	1080
49	UNIV ALA-TUSCALOOSA	Carter, C. H.	HQ-PY	Raney, D. C.	NGT 01-002-080	1090
49	UNIV OF ARIZONA		ARC		NAS 2-6447	1115
49	UNIV OF ARIZONA	Kascak, A. F.	LERC	Perkins, H. C.	NGR 03-002-213	1154
49	UNIV CALIF-L ANGELES	Seltzer, S. M.	MSFC	Likins, P. W.	NAS 8-28358	1476
49	UNIV OF FLORIDA	Deese, J. H.	KSC	Farber, E. A.	NAS10-1255	1792
49	UNIV OF FLORIDA	Jorolan, A. E.	KSC	Farber, E. A.	NAS10-8051	1794
49	UNIV OF FLORIDA		LARC		NAS 1-5722	1787
49	UNIV OF FLORIDA	Oertel, G. K.	HQ-SG	Schneider, R. T.	NGL 10-005-049	1799
49	UNIV OF HOUSTON	Eandi, B. K.	JSC	Huang, C. J.	NGL 44-005-090	3307
49	UNIV OF HOUSTON	Carter, C. H.	HQ-PY	Huang, C. J.	NGT 44-005-114	3320
49	UNIV OF HOUSTON	Carter, C. H.	HQ-PY	Huang, C. J.	NGT 44-005-115	3321
49	UNIV OF KANSAS	Dell, M. E.	JSC	Moore, R. K.	NAS 9-13347	2056
49	UNIV OF KANSAS		HQ-PY	Vitale, J. A.	NGR 17-002-052	2060
49	UNIV MARYLAND-COL PK	Laurence, J. C.	LERC	Spain, I. L.	NGR 21-002-358	2190
49	UNIV MARYLAND-COL PK	Carter, C. H.	HQ-PY	Emad, F. P.	NGT 21-002-254	2197
49	UNIV MICH-ANN ARBOR	Tripp, J. S.	LARC	Zeigler, B. P.	NGR 23-005-427	2461
49	UNIV MICH-ANN ARBOR	Tripp, J. S.	LARC	Zeigler, B. P.	NGR 23-005-602	2480
49	UNIV MICH-ANN ARBOR	Littles, J. W.	MSFC	Merte, H., Jr.	NAS 8-20228	2442
49	U MINN-MNPLS-ST PAUL	Wainscott, F. H.	GSFC	Winckler, J. R.	NAS 5-11687	2499
49	UNIV MO-COLUMBIA	Chambers, A. B.	ARC	Miles, J. B.	NGR 26-004-095	2560
49	UNIV MO-ROLLA	Coe, C. F.	ARC	Rechtien, R. D.	NGR 26-003-026	2569
49	UNIV MO-ROLLA	Flatley, T. W.	GSFC	Taylor, J. M.	NGR 26-003-069	2571
49	UNIV OF PERU		GSFC		NASW 7	3626
49	UNIV OF ROME		HQ-SV		NASW 1761	3622
49	UNIV OF SANTA CLARA	Doolin, B. F.	ARC	Siljak, D. D.	NGR 05-017-010	1588
49	UNIV OF SANTA CLARA	Seltzer, S. M.	MSFC	Siljak, D. D.	NAS 8-27799	1587
49	UNIV OF SO CAROLINA	Jachimowski, C. J.	LARC	Connor, L. N.	NGR 41-002-026	3144
49	UNIV OF SO FLORIDA	Hayduk, R. J.	LARC	Oline, L. W.	NGR 10-008-028	1818
49	UNIV OF SOUTHERN CAL	Carter, C. H.	HQ-PY	Kaprielian, Z. A.	NGT 05-018-127	1618
49	UNIV TEXAS-AUSTIN	Eandi, B. K.	JSC		NGL 44-012-133	3338
49	UNIV OF TOLEDO	Willoh, R. G.	LERC	Leininger, G. G.	NGR 36-010-024	2997
49	UNIV OF VIRGINIA	Clevenson, S. A.	LARC	Allison, J. L.	NGL 47-005-151	3475
49	UNIV OF VIRGINIA	Gross, C.	LARC	Mattauch, R. J.	NGR 47-005-093	3476
49	UNIV WISC-MADISON	Taketa, S. T.	ARC	Tibbetts, T. W.	NAS 2-7314	3563
49	UNIV WISC-MADISON	Misencik, J. A.	LERC	Johnson, M. W., Jr.	NGR 50-002-166	3590
49	UTAH STATE UNIV	Doolin, B. F.	ARC	Gunderson, R. W.	NGR 45-002-016	3426
49	VANDERBILT UNIVERSITY		LERC		NAS 3-8545	3180
49	VIRGINIA POLY INST	Hayduk, R. J.	LARC	Melosh, R. J.	NGR 47-004-114	3520
49	VIRGINIA POLY INST	Charak, M. T.	HQ-RO	Tieleman, H. W.	NGL 47-004-067	3502
49	YOUNGSTOWN STATE U	Gray, D. L.	LARC	Zuckerwar, A. J.	NGR 36-028-006	2999
51	BAYLOR UNIV-MED COL	Haines, R. F.	ARC	Decker, T. A.	NGR 44-003-057	3202
51	BOSTON UNIVERSITY	Jacobs, G. J.	HQ-ER	MacKay, R. S.	NGR 22-004-024	2210
51	BOWLING GRN STATE U	Miquel, J.	ARC	Oster, I. I.	NAS 2-6067	2927
51	CALIF INST OF TECH	Winter, D.	ARC	Strumwasser, F.	NGR 05-002-031	1210
51	CALIF INST OF TECH	Johnson, R. D.	ARC	Horowitz, N. H.	NGR 05-002-308	1234
51	CALIF INST OF TECH	Young, R. S.	HQ-SL	Horowitz, N. H.	NGR 05-002-121	1213
51	CAL STATE U-SAN FRAN		ARC		NAS 2-2216	1251
51	CATHOLIC UNIVERSITY	MacElroy, R. D.	ARC	Decicco, B. T.	NGR 09-005-098	1741
51	CATHOLIC UNIVERSITY	Saunders, J. F.	HQ-MM	Decicco, B. T.	NGR 09-005-022	1736
51	CENTRAL ST UNIV-OHIO	Pohly, J. G.	HQ-PY	Craft, T. J.	NGR 36-033-003	2951
51	CLEMSON UNIV-CLEMSON	Ferguson, J. K.	JSC	Guthrie, R. K.	NAS 9-10494	3135

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51	COLLEGE OF WM & MARY	Hoffman, R. A.	JSC	Aceto, H., Jr.	NGR 47-006-054	3436
51	COLORADO STATE UNIV	Bell, N. L.	ARC	Adam, D. D.	NAS 2-6585	1625
51	COLORADO STATE UNIV	Tremor, J. W.	ARC	Baker, R.	NAS 2-6615	1626
51	COLORADO STATE UNIV	Winter, D. L.	ARC	Ogg, J. E.	NGR 06-002-166	1647
51	COLORADO STATE UNIV	Holton, E. M.	WS	Jordan, J. P.	NGR 06-002-075	1637
51	COLORADO STATE UNIV	Saunders, J. F.	HQ-MM	Lett, J. T.	NGR 06-002-128	1645
51	CORNELL UNIVERSITY	Tremor, J. W.	ARC	Steward, F. C.	NAS 2-6065	2745
51	CORNELL UNIVERSITY	Geib, D. S.	HQ-SL	Duxbury, J. M.	NGR 33-010-127	2765
51	DARTMOUTH COLLEGE	Winter, D. L.	ARC	Lyon, C. J.	NGR 30-001-001	2604
51	DELAWARE STATE COL	Picciolo, G. L.	GSFC	Bush, V. N.	NGR 08-002-003	1722
51	EASTRN MICHIGAN UNIV	Taylor, G. R.	JSC	Volz, P. A.	NAS 9-11562	2411
51	EMORY UNIVERSITY	Winter, D. L.	ARC	Bourne, G. H.	NGR 11-001-016	1822
51	EMORY UNIVERSITY	Anliker, J. E.	ARC	Perachio, A. A.	NGR 11-001-045	1822
51	EMORY UNIVERSITY	Holton, E. M.	WS	Popovic, V. P.	NGL 11-001-009	1820
51	FLORIDA STATE UNIV	Fedderson, W. E.	JSC	Haythorn, W. W.	NGR 10-004-071	1783
51	FLORIDA STATE UNIV	Young, R. S.	HQ-SL	Gaffron, H.	NGR 10-004-018	1780
51	FLORIDA STATE UNIV	Young, R. S.	HQ-SL	Larock, P. A.	NGR 10-004-041	1781
51	GEORGETOWN UNIV	Krupnick, A. C.	MSFC	Leise, E. M.	NAS 8-29778	1765
51	HARDIN-SIMMONS UNIV	Hall, L. B.	HQ-SL	Foster, T. L.	NGR 44-095-001	3203
51	HARVARD UNIVERSITY	Dunlap, W. A.	ARC	Tashjian, A. H.	NAS 2-6644	2218
51	INDIANA U-BLOOMINGTN	Weisman, N. W.	ARC	Neff, W. D.	NGR 15-003-007	1981
51	JACKSON STATE COL	Pohly, J. G.	HQ-PY	Nelson, F.	NGR 25-011-001	2528
51	LA STATE U-BAT ROUGE	Kimzey, S. L.	JSC	Wilkins, B.	NGR 19-001-085	2100
51	LA STATE U-NEW ORLNS	Walkinshaw, C. H.	JSC	Laseter, J. L.	NAS 9-11339	2102
51	LA STATE U-NEW ORLNS	Walkinshaw, C. H.	JSC	Laseter, J. L.	NAS 9-12941	2103
51	MASS INST OF TECH	Winget, C. M.	ARC	Bowditch, P. N.	NAS 2-5951	2253
51	MASS INST OF TECH	Soffen, G. A.	LARC	Rich, A.	NAS 1-9691	2247
51	MICHIGAN STATE UNIV	Young, R. S.	HQ-SL	Erickson, A. E.	NGR 23-004-069	2418
51	MT SINAI SCH OF MED	Harrison, G. A.	ARC	Rule, A. H.	NGR 33-202-001	2800
51	NO CAROLINA STATE U	Dunlap, W. A.	ARC	Grosch, D. S.	NAS 2-6684	2895
51	OREGON STATE UNIV	Geib, D. S.	HQ-SL	Curl, C. H.	NGR 38-002-013	3017
51	PENNSYLVANIA STATE U	Young, R. S.	HQ-SL	Casida, L. E., Jr.	NGR 39-009-180	3084
51	RICE UNIVERSITY	De'Vincenza, D.	ARC	Ward, C. H.	NAS 2-6614	3211
51	RICE UNIVERSITY	Walkinshaw, C. H.	JSC	Ward, C. H.	NAS 9-12912	3219
51	ST LOUIS UNIVERSITY	Williams, B. A.	ARC	Von Beaumont, W.	NGR 26-006-039	2550
51	SO ILL UNIV-CARBONDL	Young, R. S.	HQ-SL	Yopp, J. H.	NGR 14-008-026	1907
51	STANFORD UNIVERSITY		ARC		NAS 2-1677	1261
51	STANFORD UNIVERSITY		ARC		NAS 2-2320	1263
51	STANFORD UNIVERSITY	Tremor, J. W.	ARC	Pittendrigh, C. S.	NAS 2-5587	1267
51	STANFORD UNIVERSITY	Miquel, J.	ARC	Bensch, K. G.	NAS 2-6706	1273
51	STANFORD UNIVERSITY	Soffen, G. A.	LARC	Lederberg, J.	NAS 1-9692	1259
51	STANFORD UNIVERSITY	Young, R. S.	HQ-SL	Lederberg, J.	NGR 05-020-004	1322
51	STATE UNIV NY-BUFFAL	Vaughn, C. R.	WS	Williams, T. C.	NGL 33-183-012	2843
51	STATE UNIV NY-BUFFAL		HQ-ER	Danielli, J. F.	NGR 33-015-016	2845
51	STATE UNIV NY-BUFFAL	Jacobs, R. G.	HQ-ER	Williams, T. C.	NGR 33-183-003	2847
51	TEXAS A&M UNIVERSITY	Taylor, G. R.	JSC	Foster, B. G.	NAS 9-11931	3254
51	TEXAS A&M UNIVERSITY	Walkinshaw, C. H.	JSC	Halliwell, R. S.	NAS 9-12671	3258
51	TEXAS A&M UNIVERSITY	Walkinshaw, C. H.	JSC	Kuykendall, W. E., Jr.	NAS 9-13374	3260
51	TUFTS UNIVERSITY	Jackson, M. M.	JSC	Spodick, D. H.	NGR 22-012-026	2391
51	UNIV ARKANSAS-FAYETV		HQ-MM	Pauly, J. E.	NGR 04-001-039	1174
51	UNIV CALIF-BERKELEY	Newsom, B. D.	ARC	Pace, N.	NGL 05-003-024	1397
51	UNIV CALIF-BERKELEY	Young, R. S.	HQ-SL	McLaron, A. D.	NGL 05-003-079	1398
51	UNIV CALIF-BERKELEY	Young, R. S.	HQ-SL	Jukes, T.	NGR 05-003-020	1407
51	UNIV CALIF-DAVIS	Winget, C. M.	ARC	Evans, J. S.	NAS 2-5826	1444
51	UNIV CALIF-DAVIS	Oyama, J.	ARC	Smith, A. H.	NGL 05-004-008	1455
51	UNIV CALIF-DAVIS	Holton, E. M.	WS	Smith, R. E.	NGR 05-004-035	1459
51	UNIV CALIF-DAVIS		HQ-MM	Ingraham, J. L.	NGL 05-004-002	1454
51	UNIV CALIF-L ANGELES	Tremor, J. W.	ARC	Ebersold, W. T.	NAS 2-6649	1466

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51	UNIV CALIF-L ANGELES	Winter, D.	ARC	French, J. D.	NGL 05-007-195	1489
51	UNIV CALIF-SAN DIEGO	Harmount, T.	ARC	Miller, S. L.	NGR 05-009-032	1550
51	UNIV CALIF-SAN DIEGO	Saunders, J. F.	HQ-MM	Baily, N. A.	NGL 05-009-103	1543
51	UNIV CALIF-SAN FRAN	Danellis, J. V.	ARC	Dallman, M.	NAS 2-6632	1569
51	UNIV OF CHICAGO	Dauntton, N. G.	ARC	Fernandez, C.	NGR 14-001-225	1944
51	UNIV OF HAWAII	Taketa, S. T.	ARC	Siegal, S. M.	NAS 2-6624	1864
51	UNIV OF HAWAII	Young, R. S.	HQ-SL	Siegel, S. M.	NGL 12-001-042	1871
51	UNIV OF HOUSTON	Miquel, J.	ARC	Oro, J.	NAS 2-7435	3284
51	UNIV OF HOUSTON	Walkinshaw, C. H.	JSC	Venketeswaran, S.	NAS 9-13262	3301
51	UNIV OF HOUSTON	Taylor, G. R.	JSC	Clark, W. H., Jr.	NAS 9-13306	3302
51	UNIV ILLINOIS-URBANA	Williams, B. A.	ARC	Heath, J. E.	NGR 14-005-192	1968
51	UNIV OF IOWA	Schillinger, G.	ARC	Wunder, C. C.	NAS 2-6064	2027
51	UNIV OF IOWA	Oyama, J.	ARC	Wunder, C. C.	NGR 16-001-031	2043
51	UNIV OF IOWA		MSFC		NAS 9-1208	2039
51	UNIV OF KANSAS		HQ-SL	Himes, R. H.	NGR 17-002-042	2059
51	UNIV MARYLAND-BALT	Jacobs, G. J.	HQ-ER	Grenell, R. G.	NGR 21-002-040	2146
51	UNIV OF MASS-AMHERST	Saunders, J. F.	HQ-MM	Nordin, J. H.	NGL 22-010-029	2399
51	U MINN-MNPLS-ST PAUL	Rummel, J. A.	JSC	Halberg, F.	NAS 9-13405	2506
51	U MINN-MNPLS-ST PAUL	Hall, L. B.	HQ-SL	Pflug, I. J.	NGL 24-005-160	2509
51	U MINN-MNPLS-ST PAUL	Young, R. S.	HQ-SL	Schmidt, E. L.	NGR 24-005-198	2517
51	UNIV MO-COLUMBIA	Holton, E. M.	WS	Musacchia, X. J.	NGL 26-004-021	2557
51	UNIV MO-COLUMBIA		WS	South, F. E.	NGR 26-004-025	2558
51	UNIV OF MONTANA	Jacobs, G. J.	HQ-ER	Craighead, J. J.	NGR 27-002-006	2588
51	UNIV NEVADA-L VEGAS	Young, R. S.	HQ-SL	Tew, R. W.	NGR 29-001-039	2596
51	UNIV OF NOTTINGHAM	Feller, D. D.	ARC	Weinbren, K.	NAS 2-5157	3619
51	UNIV OF PENNSYLVANIA	Zill, L. P.	ARC	Brown, A. H.	NAS 2-2432	3099
51	UNIV OF ROCHESTER	Soffen, G. A.	LARC	Vishniac, W.	NAS 1-9689	2879
51	UNIV OF ROCHESTER	Young, R. S.	HQ-SL	Vishniac, W. V.	NGR 33-019-002	2881
51	UNIV OF SOUTHERN CAL	Jackson, M. M.	JSC	Meehan, J. P.	NGR 05-018-122	1610
51	UNIV OF SOUTHERN CAL	Belleville, R. E.	HQ-MM	Henry, J. P.	NGL 05-018-003	1607
51	UNIV TEX-DENTAL BRCH	Buchanan, P.	JSC	Shannon, I. L.	NAS 9-10566	3385
51	UNIV TEX-DENTAL BRCH	Buchanan, P.	JSC	Brown, L. R.	NAS 9-11118	3386
51	U TEX HEALTH CTR-SA	Leach, C.	JSC	Morgan, W. W.	NGR 44-094-001	3397
51	U TEX HEALTH CTR-DAL		ARC		NAS 2-3082	3394
51	U TEX HEALTH CTR-DAL	Tremor, J. W.	ARC	Montgomery, P. O., Jr.	NGR 44-012-003	3395
51	UNIV OF VIRGINIA	Oyama, J.	ARC	Pitts, G. C.	NAS 2-1554	3467
51	UNIV OF VIRGINIA	Wolf, T. D.	FRC	Jacobson, I. D.	NGR 47-005-202	3485
51	UNIV OF WASHINGTON	Jackson, M. M.	JSC	Scher, A. M.	NGR 48-002-135	3545
51	UNIV OF WASHINGTON	Young, R. S.	HQ-SL	Gordon, M. P.	NGR 48-002-130	3543
51	UNIV WISC-GREEN BAY	Waligora, J. M.	JSC	Kaufman, W. C.	NGR 50-008-001	3561
51	UNIV WISC-MADISON	Mandel, A. D.	ARC	Dick, E. C.	NGL 50-002-078	3580
51	UNIV WISC-MADISON	Saunders, J. F.	HQ-MM	Tibbitts, T. W.	NGR 50-002-109	3585
51	UTAH STATE UNIV	Young, R. S.	HQ-SL	Salisbury, F. B.	NGR 45-002-008	3425
51	VIRGINIA COMNWLTH U	Wilkins, J. R.	LARC	Dalton, H. P.	NGL 47-002-020	3490
51	VIRGINIA COMNWLTH U	Saunders, J. F.	HQ-MM	Ham, W. T.	NGL 47-002-005	3489
51	VIRGINIA COMNWLTH U	Saunders, J. F.	HQ-MM	Lippincott, S. W.	NGR 47-002-018	3491
51	WAYNE STATE UNIV	Krupnick, A. C.	MSFC	Brown, R. K.	NAS 8-29823	2486
51	YALE UNIVERSITY	Young, R. S.	HQ-SL	Morowitz, H. J.	NGR 07-004-009	1710
52	BAYLOR UNIV-MED COL	Alexander, W. C.	JSC	Johnson, P. C.	NAS 9-7280	3188
52	BAYLOR UNIV-MED COL	Leach, C. S.	JSC	Campbell, B. O.	NAS 9-10537	3190
52	BAYLOR UNIV-MED COL	Day, J. L.	JSC	Frost, J. D.	NAS 9-11327	3192
52	BAYLOR UNIV-MED COL	Smith, M. C., Jr.	JSC	Nichols, B. L.	NAS 9-12728	3195
52	BAYLOR UNIV-MED COL	Kimzey, S. L.	JSC	Nichols, B. L.	NGR 44-003-053	3200
52	BOSTON UNIVERSITY	Hoffler, G. W.	JSC	Chobanion, A. V.	NGR 22-004-021	2209
52	CORNELL UNIVERSITY	Rambaut, P. C.	JSC	Lutwak, L.	NAS 9-11030	2751
52	GEORGETOWN UNIV	Mandel, A. D.	ARC	Gray, I.	NGR 09-009-024	1766
52	HARDING COLLEGE	Olree, H. D.	JSC		NAS 9-9433	1172
52	HARVARD UNIVERSITY	Arnoldi, L. B.	HQ-JG	Hershberg, P. I.	NGR 22-007-203	2239

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52	INDIANA U-BLOOMINGTN	Vinograd, S. P.	HQ-MM	Maickel, R. P.	NGL 15-003-117	1980
52	MASS INST OF TECH	Winget, C. M.	ARC	Wurtman, R. J.	NGR 22-009-627	2350
52	MASS INST OF TECH	Hoffler, G. W.	JSC	Lees, R. S.	NAS 9-12289	2290
52	MASS INST OF TECH	Belleville, R. E.	HQ-MM	Schmitt, F. O.	NGR 22-009-018	2330
52	NEW YORK UNIVERSITY	Bailey, J. V.	JSC	Post, J.	NGR 33-016-102	2810
52	NO TEXAS STATE UNIV	Kimzey, S. L.	JSC		NAS 9-13221	3200
52	OHIO STATE UNIV	Sandler, H.	ARC	Wells, M. K.	NGR 36-008-193	2970
52	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NGL 05-020-305	1310
52	STANFORD UNIVERSITY	Ernikos-Danells, J. V.	ARC	Levine, S.	NGL 05-020-326	1310
52	STANFORD UNIVERSITY	Feller, D. D.	ARC	Degrazia, J. A.	NGR 05-020-578	1340
52	STANFORD UNIVERSITY	Sandler, H.	ARC	Harrison, D. C.	NGR 05-020-634	1350
52	TEXAS A&M UNIVERSITY	Hoffman, R. A.	JSC	Hightower, D.	NAS 9-9053	3240
52	UNIV CALIF-DAVIS	Dolkas, C.	ARC	Sheikholislam, B.	NAS 2-7342	1440
52	UNIV CALIF-DAVIS	Leach, C. S.	JSC	Beljan, J. R.	NAS 9-13504	1450
52	UNIV CALIF-IRVINE	Mandel, A. D.	ARC	Tilles, J. G.	NGR 05-041-012	1460
52	UNIV CALIF-L ANGELES	Delucchi, M. R.	JSC	Kales, A.	NAS 9-10835	1470
52	UNIV CALIF-SAN FRAN	Danellis, J. V.	ARC	Dallman, M. F.	NAS 2-7326	1570
52	UNIV CALIF-SAN FRAN	Mandel, A. D.	ARC	Maibach, H. I.	NGR 05-025-008	1570
52	UNIV CALIF-SAN FRAN	Jackson, M. M.	JSC	Earley, L. E.	NGR 05-025-007	1570
52	UNIV OF HOUSTON	Schneider, H. J.	JSC	Zlatkis, A.	NAS 9-12093	3290
52	UNIV OF HOUSTON	Schneider, H. J.	JSC	Zlatkis, A.	NAS 9-13068	3290
52	UNIV OF HOUSTON	Schneider, H. J.	JSC	Zlatkis, A.	NAS 9-13457	3300
52	UNIV ILLINOIS-URBANA	Edge, P. M., Jr.	LARC	Ades, H. W.	NGL 14-005-074	1950
52	UNIV OF MIAMI	Leach, C. S.	JSC	Epstein, M.	NGR 10-007-097	1810
52	UNIV MICH-ANN ARBOR	Arnoldi, L. B.	HQ-JG	French, J. R., Jr.	NGR 23-005-185	2450
52	UNIV MO-COLUMBIA	Sandler, H.	ARC	Hahn, A. W.	NGR 26-004-099	2560
52	UNIV OF NEW MEXICO	Brockett, R. M.	JSC	Gardner, R. L.	NAS 9-12720	2690
52	U TEX CANCER CENTER	Moseley, E. C.	JSC	Mitchell, B. A., Jr.	NAS 9-7153	3350
52	UNIV TEX-DENTAL BRCH	Alexander, W. C.	JSC	Hampton, J. K., Jr.	NGR 44-090-001	3380
52	UNIV TEXAS-GALVESTON	Sandler, H.	ARC	Stone, H. L.	NGR 44-088-002	3390
52	UNIV TEXAS-GALVESTON	Kimzey, S. L.	JSC	Ritzmann, S. E.	NAS 9-11088	3380
52	UNIV TEXAS-GALVESTON	Leach, C.	JSC	Ritzmann, S. E.	NAS 9-12296	3390
52	UNIV OF WASHINGTON	Sandler, H.	ARC	Scher, A. M.	NGR 48-002-131	3540
52	UNIV WISC-MADISON	Young, D. R.	ARC	Cameron, J. R.	NGR 50-002-051	3580
52	UNIV WISC-MADISON	Mandel, A. D.	ARC	Dick, E. C.	NGR 50-002-174	3590
52	UNIV WISC-MADISON	Young, D. R.	ARC	Mazess, R. B.	NGR 50-002-183	3590
52	UNIV WISC-MADISON	Mandel, A. D.	ARC	Balish, E.	NGR 50-002-191	3590
52	WAKE FOREST UNIV	Alexander, W. C.	JSC	Hutchins, P. M.	NAS 9-11690	2920
52	WEST VIRGINIA UNIV	Danellis, J. V.	ARC	Moran, W. H.	NGL 49-001-019	3550
52	WEST VIRGINIA UNIV	Poillack, J. B.	ARC	Leovy, C. B.	NGR 49-001-048	3550
52	YALE UNIVERSITY	Mandel, A. D.	ARC	Evans, A. S.	NGR 07-004-146	1710
53	BAYLOR UNIV-MED COL	Kimzey, S. L.	JSC	Criswell, B. S.	NAS 9-13139	3190
53	BAYLOR UNIV-MED COL	Shumate, W. H.	JSC	Roessler, R.	NAS 9-13452	3190
53	BAYLOR UNIV-MED COL	Kimzey, S. L.	JSC		NGR 44-003-044	3190
53	CASE WESTERN RESERVE	Sandler, H.	ARC	Ko, W. H.	NGR 36-027-053	2940
53	CORNELL UNIVERSITY	Sandler, H.	ARC	Reis, D. J.	NGR 33-010-179	2770
53	DUKE UNIVERSITY	Harmaker, W. E.	ARC	Vogel, F. S.	NAS 2-7655	2880
53	DUKE UNIVERSITY	Fitch, R. C.	JSC	Walbaisht, M. L.	NAS 9-11994	2880
53	HARVARD UNIVERSITY	Young, D. R.	ARC	Tashjian, A. H., Jr.	NGR 22-007-256	2240
53	HOWARD UNIVERSITY	Sandler, H.	ARC	Hawthorne, E. W.	NGL 09-011-017	1760
53	JOHNS HOPKINS UNIV	Gross, F. C.	GSFC	Rubin, R. J.	NAS 5-22071	2130
53	MASS INST OF TECH	Heidelbaugh, N. D.	JSC	Karel, M.	NAS 9-12485	2300
53	OHIO STATE UNIV	Oyama, J.	ARC	Clarke, D. L.	NAS 2-6634	2950
53	OHIO STATE UNIV	Oyama, J.	ARC	Lim, D. J.	NAS 2-6792	2950
53	OHIO STATE UNIV	Danellis, J. V.	ARC	Marks, B. M.	NGR 36-008-168	2970
53	STANFORD UNIVERSITY	Danellis, J.	ARC	Barchas, J. D.	NAS 2-7637	1270
53	STANFORD UNIVERSITY	Greenleaf, J. E.	ARC	Luetscher, J. A.	NGR 05-020-456	1330
53	STANFORD UNIVERSITY	Sandler, H.	ARC	Meindl, J. D.	NGR 05-020-615	1350

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53	STANFORD UNIVERSITY	Rummel, J.	JSC	Lederberg, J.	NGR 05-020-632	1355
53	UNIV CALIF-DAVIS	Oyama, J.	ARC	Goldman, M.	NAS 2-6763	1447
53	UNIV CALIF-DAVIS	Winget, C. M.	ARC	Beljan, J. R.	NAS 2-7152	1448
53	UNIV CALIF-DAVIS	Winget, C. M.	ARC	Chapman, L. F.	NAS 2-7519	1452
53	UNIV CALIF-DAVIS	Sandler, H.	ARC	Carlson, L. D.	NGL 05-004-031	1456
53	UNIV CALIF-DAVIS	Young, D. R.	ARC	Beljan, J. R.	NGR 05-004-080	1463
53	UNIV CALIF-DAVIS	Jackson, M. M.	JSC	Carlson, L. D.	NGR 05-004-026	1458
53	UNIV CALIF-SAN DIEGO	Billingham, J.	ARC	West, J. B.	NGL 05-009-109	1544
53	UNIV OF HOUSTON	Walkinshaw, C. H.	JSC	Venketeswaran, S.	NAS 9-10947	3288
53	UNIV OF HOUSTON	Jackson, J. T.	JSC	Sheer, D. H.	NAS 9-11885	3292
53	UNIV OF HOUSTON	Chassey, C. E.	JSC	Gupta, V. D.	NAS 9-13134	3300
53	UNIV ILLINOIS-CHICGO	Kimzey, S. L.	JSC	Guttman, H. N.	NGR 14-012-026	1949
53	UNIV MISS-MEDL CNTR	Rummel, J. A.	JSC	Milhorn, H. T., Jr.	NGR 25-002-018	2544
53	UNIV MO-KANSAS CITY	Rummel, J. A.	JSC	Bryant, P. J.	NGR 26-001-016	2566
53	UNIV OF PENNSYLVANIA	Michel, E. L.	JSC	Lambertsen, C. J.	NGL 39-010-097	3101
53	UNIV OF SANTA CLARA	Sandler, H.	ARC	Mancini, R. E.	NGR 05-017-028	1592
53	UNIV OF SANTA CLARA	Sandler, H.	ARC	Mancini, R. E.	NGR 05-017-034	1596
53	U TEX CANCER CENTER	Benson, R. E.	JSC	Jahns, M. F.	NAS 9-11117	3355
53	UNIV TEXAS-GALVESTON	Kimzey, S. L.	JSC	Lockhart, L. H.	NAS 9-13102	3391
53	U TEX HEALTH CTR-SA	Jackson, M.	JSC	Earley, L. E.	NGR 44-094-003	3398
53	UNIV TEX-PUB HEALTH	Fuller, C. E.	JSC	Scanlon, J. E.	NAS 9-11522	3400
53	UNIV TEX-PUB HEALTH	Schneider, H. J.	JSC	Labarthe, D. R.	NAS 9-12640	3404
53	UNIV TEX-PUB HEALTH	Fuller, C. E.	JSC	Scallon, J. E.	NAS 9-12696	3405
53	UNIV TEX-PUB HEALTH	McQueen, J. L.	JSC	Downs, J. D.	NAS 9-12783	3406
53	UNIV TEX-PUB HEALTH	Fuller, C. E.	JSC	Rush, M. N.	NAS 9-12823	3407
53	U TEX HEALTH CTR-DAL	Hoffler, G. W.	JSC	Mitchell, J. H.	NGR 44-012-151	3396
53	UNIV OF WEST FLORIDA	Fuller, C. E.	JSC	Edmisten, J. A.	NAS 9-11872	1819
53	VIRGINIA COMNWLTH U	Rummel, J. A.	JSC	Patterson, J. L.	NGR 47-002-038	3492
53	VIRGINIA POLY INST	McQueen, J. L.	JSC	Moore, W. E.	NAS 9-12601	3499
53	WASHINGTON UNIVERSTY	Rambaut, P. C.	JSC	Ballinger, W. F.	NSR 26-008-036	2584
59	ALBANY MED COLLEGE	Harris, E. S.	JSC	Coulston, F.	NAS 9-9964	2707
59	BAYLOR UNIV-MED COL	Harris, E. S.	JSC		NAS 9-8109	3189
59	BAYLOR UNIV-MED COL	Leach, C. S.	JSC	Johnson, P. C.	NAS 9-11201	3191
59	BAYLOR UNIV-MED COL	Delucchi, M. R.	JSC	Frost, J. D.	NAS 9-11855	3194
59	BAYLOR UNIV-MED COL	Leach, C. S.	JSC	Di'Ferrante, N.	NAS 9-13540	3198
59	BAYLOR UNIV-MED COL	Shumate, W. H.	JSC	Kellaway, P.	NGR 44-003-054	3201
59	BOSTON UNIVERSITY	McKinney, V. L.	HQ-MM	Fulton, G. P.	NGR 22-004-018	2208
59	BRYN MAWR COLLEGE	Patton, M.	ARC	Yarczower, M.	NGR 39-018-002	3032
59	CALIF INST OF TECH	Kvenvolden, K. A.	ARC	Bonner, J.	NGR 05-002-310	1235
59	CAL STATE U-SAN JOSE	Stewart, J. D.	ARC	Clarke, B.	NGL 05-046-002	1253
59	COLLEGE OF WM & MARY	Holton, E. M.	WS	Jolly, R. K.	NGR 47-006-064	3437
59	CORNELL UNIVERSITY	Szajna, E. F.	GSFC	McNair, A. J.	NAS 5-21844	2747
59	FORDHAM UNIVERSITY	Moseley, E. C.	JSC	Kubis, J. F.	NAS 9-11839	2792
59	GEORGE WASHINGTON U	Baker, C. E.	LERC	Schiff, H. I.	NSR 09-010-027	1764
59	GRAMBLING COLLEGE	Lewallen, J. M.	JSC	Foster, B. R.	NGR 19-011-008	2081
59	HARVARD UNIVERSITY	Leavitt, W. F.	ARC	Burgess, W. A.	NGL 22-007-053	2224
59	HARVARD UNIVERSITY	Young, D.	ARC	Hegstid, D. M.	NGL 22-007-101	2226
59	HARVARD UNIVERSITY	Smith, M. C.	JSC	Hegsted, D. M.	NAS 9-13370	2221
59	HOWARD UNIVERSITY	Chen, W. T.	HQ-PY	Deloatch, E. M.	NGT 09-011-051	1776
59	MASS INST OF TECH	Chambers, A. B.	ARC	Yankovitch, D.	NAS12-2265	2307
59	MASS INST OF TECH	Daunton, N. G.	ARC	Tauber, H.	NGL 22-009-308	2322
59	MASS INST OF TECH	Winter, D. L.	ARC	Schmitt, F. O.	NGR 22-009-726	2368
59	MASS INST OF TECH	Wempe, T.	ARC	Curry, R. E.	NGR 22-009-733	2371
59	MASS INST OF TECH	Heidelbaugh, N. D.	JSC	Labuza, T. P.	NAS 9-10658	2291
59	MASS INST OF TECH	Rambaut, P. C.	JSC	Scrimshaw, N. S.	NAS 9-10754	2294
59	MASS INST OF TECH	Lang, R. H.	HQ-MM	Young, L. R.	NGL 22-009-156	2319
59	MISSISSIPPI STATE U	Redding, E. R.	HQ-PY	Bouchillon, C. W.	NGL 25-001-028	2539
59	OHIO STATE UNIV	Leon, H. A.	ARC	Weiss, H. S.	NGR 36-008-004	2969

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59	OHIO STATE UNIV	Brownstein, H.	HQ-MM	Ellingson, H. V.	NSR 36-008-108	2980
59	PENNSYLVANIA STATE U	Homick, J. L.	JSC	Kales, A.	NGR 39-009-204	3088
59	PURDUE UNIVERSITY	Heidelbaugh, N. D.	JSC	Haugh, C. G.	NAS 9-10823	1989
59	STANFORD UNIVERSITY	Danellis, J. V.	ARC	Davidson, J.	NAS 2-6217	1269
59	STANFORD UNIVERSITY	Hewitt, J. E.	ARC	Herman, M. M.	NAS 2-6332	1271
59	STANFORD UNIVERSITY	Dunlap, W. A.	ARC	Snyder, S. B.	NAS 2-7205	1276
59	STANFORD UNIVERSITY	Kvenvolden, K. A.	ARC	Bonner, W. A.	NGL 05-020-582	1320
59	STANFORD UNIVERSITY	Chang, S.	ARC	Loew, G. H.	NGR 05-020-405	1330
59	STANFORD UNIVERSITY	Mehler, W. R.	ARC	Chow, K. L.	NGR 05-020-435	1332
59	ST U NY-UPST MED CTR	Leach, C. S.	JSC	Miller, M.	NAS 9-11846	2868
59	TEXAS A&M UNIVERSITY	Stonesifer, G. R.	GSFC	Rouse, J. W., Jr.	NAS 5-21857	3244
59	TEXAS A&M UNIVERSITY	Heidelbaugh, N. D.	JSC	Burns, E. E.	NAS 9-12434	3256
59	TEXAS WOMANS UNIV	Hewitt, J. E.	ARC	Mack, P. B.	NAS 2-6434	3280
59	TEXAS WOMANS UNIV	Rambaut, P. C.	JSC	Mack, P. B.	NAS 9-9755	3281
59	TUFTS UNIVERSITY	Harrison, G. A.	ARC	Rule, A. H.	NGR 22-012-030	2393
59	UNIV OF ARIZONA	Stonesifer, G. R.	GSFC	McGinnies, W. G.	NAS 5-21812	1123
59	UNIV OF ARIZONA	Stonesifer, G. R.	GSFC	Lowe, C. H.	NAS 5-21819	1124
59	UNIV CALIF-BERKELEY	Newsom, B. D.	ARC	Pace, N.	NGR 05-003-470	1429
59	UNIV CALIF-BERKELEY	Rambaut, P.	JSC	Calloway, D.	NAS 9-10930	1389
59	UNIV CALIF-DAVIS	Winget, C. M.	ARC	Beljan, J. R.	NAS 2-6657	1446
59	UNIV CALIF-DAVIS	Winget, C. W.	ARC	Evans, J. W.	NAS 2-7503	1450
59	UNIV CALIF-L ANGELES	Homick, J. L.	JSC	Markham, C. H.	NAS 9-11907	1478
59	UNIV CALIF-SAN DIEGO	Haines, R. F.	ARC	Harris, J. L.	NGR 05-009-192	1564
59	UNIV CALIF-SAN DIEGO	Anliker, J. E.	ARC	Galambos, R.	NGR 05-009-198	1566
59	UNIV CALIF-SAN FRAN	Zill, L. P.	ARC	Stolckenues, W.	NGL 05-025-014	1571
59	UNIV OF CHICAGO	Jacobs, G. J.	HQ-SB	Moran, H. F.	NGL 14-001-012	1922
59	UNIV OF CONNECTICUT	Mieszkuc, B. J.	JSC	Kenyon, A. J.	NAS 9-10844	1694
59	UNIV OF CONNECTICUT	Holland, J. M.	JSC	Kenyon, A. J.	NAS 9-11575	1695
59	UNIV OF CONNECTICUT	Mieszkuc, B. J.	JSC	Kenyon, A. J.	NAS 9-11941	1696
59	UNIV OF HAWAII	Geib, D. S.	HQ-SL	Folsome, C. E.	NGR 12-001-109	1877
59	UNIV OF HOUSTON	Heidelbaugh, N. D.	JSC	Cox, J. E.	NAS 9-11676	3290
59	UNIV OF HOUSTON	Henize, K. G.	JSC	Eisner, M. E.	NAS 9-12692	3297
59	U MINN-MNPLS-ST PAUL	Rummel, J. A.	JSC	Halberg, F.	NAS 9-12338	2504
59	U MINN-MNPLS-ST PAUL	Heidelbaugh, N. D.	JSC	Labuza, T. P.	NAS 9-12560	2505
59	UNIV MO-COLUMBIA	Kvenvolden, K. A.	ARC	Gehrke, C. W.	NGR 26-004-100	2563
59	UNIV MO-COLUMBIA	Kimzey, S. L.	JSC	Mengel, C. E.	NAS 9-9209	2552
59	UNIV MO-COLUMBIA	Rambaut, P. C.	JSC	Luckey, T. D.	NAS 9-10955	2553
59	UNIV MO-COLUMBIA	Rambaut, P. C.	JSC	Rambaut, P. C.	NAS 9-12369	2554
59	UNIV MO-COLUMBIA	Saunders, J. F.	HQ-MM	Schiffman, R. H.	NGR 26-004-084	2559
59	UNIV NEBRASKA-LINCLN	Heidelbaugh, N. D.	JSC	Hartung, T. E.	NAS 9-11045	2592
59	U OKLA-HEALTH CENTER		HQ-PY		NGT 37-003-044	3005
59	UNIV OF SOUTHERN CAL	Saunders, J. F.	HQ-MM	Meehan, J. P.	NSR 05-018-087	1619
59	UNIV TENNESSEE-KNOXV	Ensor, G. J.	GSFC	Parks, W. L.	NAS 5-21873	3156
59	U TEX CANCER CENTER	Rummel, J. A.	JSC	Mitchell, B. A., Jr.	NAS 9-11119	3356
59	UNIV TEX-PUB HEALTH	Wooley, B. C.	JSC	Eitzen, H. E.	NAS 9-11384	3399
59	UNIV TEX-PUB HEALTH	Heidelbaugh, N. D.	JSC	Chambers, L. A.	NAS 9-11701	3401
59	UNIV OF VIRGINIA	Mahler, W. R.	ARC	Ebbeson, S. O.	NGR 47-005-186	3484
59	UNIV OF VIRGINIA	Schmid, R. C.	HQ-MM	Hendricks, E. H.	NSR 47-005-070	3488
59	UNIV OF WASHINGTON	Rambaut, P. C.	JSC	Nelp, W. B.	NAS 9-13029	3530
59	UNIV OF WASHINGTON	Jackson, M. M.	JSC	Powell, L. B.	NGR 48-002-082	3538
59	UNIV WISC-MADISON	Rambaut, P. C.	JSC	Cameron, J. R.	NAS 9-12306	3576
59	UPPSALA UNIVERSITY	Mehler, W. R.	ARC	Engstrom, H.	NGR 52-028-004	3628
59	VANDERBILT UNIVERSITY	Hoffler, G. W.	JSC	Smith, R. F.	NAS 9-12889	3183
59	WORCESTER POLY INST	Wydeven, T.	ARC	Zwiebel, I.	NGL 22-017-006	2408
59	XAVIER UNIV-LA	Winget, C. M.	ARC	Ashman, P. U.	NGR 19-007-004	2120
61	AMERICAN UNIVERSITY	Belleville, R. E.	HQ-MM	Ferster, C. B.	NGR 09-003-015	1734
61	EMORY UNIVERSITY	Winter, D. L.	ARC	Perachio, H. A.	NGR 11-001-012	1821
61	HARVARD UNIVERSITY	Jacobs, G. J.	HQ-ER	Herrnstein, R. J.	NGR 22-007-138	2232

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61	HARVARD UNIVERSITY	Belleville, R. E.	HQ-MM	Kelleher, R. T.	NGR 22-007-137	2231
61	INDIANA U-BLOOMINGTN	Cawthorn, J. M.	LARC	Neff, W. D.	NGL 15-003-077	1979
61	JACKSON STATE COL	Pohly, J. G.	HQ-PY	Perkins, J.	NGR 25-011-002	2529
61	NO CAROLINA STATE U	Cawthorn, J. M.	LARC	Levere, T. E.	NGL 34-002-095	2904
61	NORTHEASTERN UNIV	Anliker, J. E.	ARC	Terman, M.	NGR 22-011-070	2384
61	TRINITY UNIVERSITY	Daunton, N. G.	ARC	Thach, J. S.	NGR 44-017-004	3282
61	UNIV CALIF-SAN DIEGO	Winter, D. L.	ARC	Galambos, R.	NGR 05-009-083	1554
61	UNIV OF KENTUCKY	Anliker, J. E.	ARC	McCoy, D. F.	NGR 18-001-068	2078
61	UNIV OF KENTUCKY	Belleville, R. E.	HQ-MM	Lange, K. O.	NGL 18-001-003	2073
61	UNIV MICH-ANN ARBOR	Schillinger, G.	ARC	Von Baumgarten A, R. J.	NAS 2-6057	2426
61	UNIV MICH-ANN ARBOR	Shillinger, G. L.	ARC	Von Baumgarten A, R.	NGR 23-005-201	2457
61	UNIV OF MILAN	Rossi, L. C.	WS	Gualtierotti, T.	NASW 2211	3621
61	U MINN-MNPLS-ST PAUL	Winget, C. M.	ARC	Halberg, F.	NGR 24-005-006	2512
61	U TEX CANCER CENTER	Moseley, E. C.	JSC	Mitchell, B. A., Jr.	NAS 9-13042	3357
62	COLUMBIA UNIVERSITY	Edge, P. M., Jr.	LARC	Borsky, P. N.	NGL 33-008-118	2731
62	JOHNS HOPKINS UNIV	Patton, R. M.	ARC	Findley, J. D.	NGR 21-001-107	2138
62	JOHNS HOPKINS UNIV	Patton, R. M.	ARC	Findley, J. D.	NGR 21-001-111	2139
62	NORFOLK STATE COL	Pohly, J. G.	HQ-PY	Colegate, R. L.	NGR 47-025-001	3442
62	TEXAS CHRISTIAN UNIV	Fedderson, W. E.	JSC	Sells, S. B.	NGR 44-009-030	3272
69	BAYLOR UNIV-MED COL	Shumate, W. M.	JSC	Roessler, R.	NAS 9-11753	3193
69	FORDHAM UNIVERSITY	Fedderson, W. E.	JSC	Kubis, J. F.	NSR 33-012-006	2794
69	OLD DOMINION UNIV	Mixon, J. S.	LARC	Kirby, R. H.	NGR 47-003-083	3463
69	STANFORD UNIVERSITY	Tanner, T. A., Jr.	ARC	Atkinson, R. C.	NGR 05-020-547	1343
69	STANFORD UNIVERSITY	Schumate, W. H.	JSC	Barckas, J. D.	NGR 05-020-576	1348
69	TEXAS CHRISTIAN UNIV	Huff, E.	ARC	Evans, S.	NGR 44-009-025	3271
69	UNIV ALA-HUNTSVILLE	Watters, H. H.	MSFC	Rogers, J. G.	NAS 8-28512	1059
69	UNIV OF FLORIDA	Anliker, J. E.	ARC	Webb, W. B.	NGR 10-005-057	1803
69	UNIV ILLINOIS-URBANA	Tanner, T. A.	ARC	Donchin, E.	NGR 14-005-175	1962
69	UNIV MICH-ANN ARBOR	Vernikos-Danell, J.	ARC	Valenstein, E. S.	NGR 23-005-487	2466
69	UNIV TEXAS-AUSTIN	Fedderson, W. E.	JSC	Helmreich, A. L.	NGR 44-012-224	3347
69	UNIV TEXAS-AUSTIN	Watters, H. H.	MSFC	Helmreich, K.	NAS 8-28511	3324
72	AUSTIN STATE UNIV	Dornbach, J.	JSC	Baker, R. D.	NAS 9-13089	3187
72	COLUMBIA UNIVERSITY	Morris, J. D.	HQ-PY	Ginzberg, E.	NGR 33-008-168	2738
72	LA STATE U-BAT ROUGE		MSFC		NAS 8-20003	2090
72	MISSISSIPPI STATE U		MSFC		NAS 8-11497	2532
72	PRINCETON UNIVERSITY	Gruber, M.	HQ-NS	Layton, J. P.	NGR 31-001-185	2653
72	UNIV SO MISSISSIPPI		MSFC		NAS 8-5414	2545
72	UNIV TEXAS-AUSTIN	Dornbach, J.	JSC		NAS 9-12949	3330
73	JOHNS HOPKINS UNIV	Emme, E. M.	HQ-AA		NSR 21-001-077	2143
73	UNIV ALA-HUNTSVILLE	Sorensen, V. C.	MSFC	Beltz, J. S.	NAS 8-26055	1044
73	UNIV OF FLORIDA	Russo, J. F.	KSC	Lomask, M.	NAS10-7791	1793
73	UNIV OF HOUSTON	Grimwood, J. M.	JSC	Swenson, L. S.	NAS 9-9104	3285
75	BOSTON COLLEGE	Morris, J. D.	HQ-PY	Bruce, B. N.	NGR 22-003-028	2206
75	DREXEL UNIVERSITY	Morris, J. D.	HQ-PY	Hagerty, W. W.	NGL 39-004-020	3045
75	GEORGE WASHINGTON U		HQ-KT	Cantor, H.	NASW 2055	1750
75	SYRACUSE UNIVERSITY	Langford, J.	HQ-MR	Drucker, E. E.	NGR 33-022-139	2875
75	UNIV CALIF-BERKELEY	Tanner, T. A., Jr.	ARC	Laporte, T. R.	NGR 05-003-471	1430
75	UNIV OF MIAMI	Frutkin, A. W.	HQ-I	Harvey, M. L.	NGR 10-007-089	1813
75	UNIV OF NEW MEXICO	Morris, J. D.	HQ-PY	Rosenthal, A. H.	NGL 32-004-042	2700
75	UNIV N CAR-CHPL HILL	Quinn, H. B.	HQ-PY	Faust, R. G.	NGL 34-003-040	2920
75	UNIV TENNESSEE-KNOXV	Morris, J. D.	HQ-PY	James, L. B.	NGR 43-001-116	3174
76	TEXAS SOUTHERN UNIV		JSC		NAS 9-8795	3273
76	UNIV OF MIAMI	Morris, J. D.	HQ-PY	Harvey, M. L.	NGR 10-007-070	1811
76	XAVIER UNIV-LA	Carter, C. H.	HQ-PY	Fulwiler, J. H.	NGR 19-007-002	2119
79	GEORGE WASHINGTON U	Redding, E. R.	HQ-PY	Mayo, A. L.	NGL 09-010-030	1753
79	NORTHWESTERN UNIV	Morris, J. D.	HQ-PY	Radnor, M.	NGL 14-007-058	1893
79	OKLAHOMA STATE UNIV	Miller, S. A.	ARC	Wiggins, K.	NAS 2-7273	3000
79	SYRACUSE UNIVERSITY	Morris, J. D.	HQ-PY	Barzelay, M. E.	NGL 33-022-090	2872

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79	UNIV OF HOUSTON	Hudson, R. O.	JSC	Holland, W. E.	NAS 9-12650	3296
99	ARIZONA STATE UNIV	Carter, C. H.	HQ-PY	Burke, W. J.	NGT 03-001-002	1112
99	AUBURN UNIV-AUBURN	Carter, C. H.	HQ-PY	Parker, W. V.	NGT 01-003-001	1026
99	BOSTON COLLEGE	Carter, C. H.	HQ-PY	Aronoff, S.	NGT 22-003-001	2207
99	CALIF INST OF TECH	Carter, C. H.	HQ-PY	Pings, C. J.	NGT 05-002-009	1237
99	CAL STATE U-LG BEACH		HQ-FE	Dean, C. T.	NASR 188	1244
99	CAL STATE U-LG BEACH		HQ-FE	Dean, C. T.	NSR 05-013-008	1247
99	CARNEGIE-MELLON UNIV	Carter, C. H.	HQ-PY	Strehler, A. F.	NGT 39-002-002	3043
99	CASE WESTERN RESERVE	Ludwig, G.	GSFC	Glaser, E. L.	NGL 36-027-001	2932
99	CASE WESTERN RESERVE	Carter, C. H.	HQ-PY	Thomas, R. H.	NGT 36-003-007	2947
99	CITY COLLEGE OF N Y	Adams, J. J.	LARC	Mekel, R.	NGR 33-013-053	2714
99	COLLEGE OF WM & MARY	Redding, E. R.	HQ-PY	Sher, A.	NGL 47-006-055	3432
99	COLORADO STATE UNIV	Carter, C. H.	HQ-PY	Bragonier, W. H.	NGT 06-002-002	1648
99	COLUMBIA UNIVERSITY	Levine, A. L.	GSFC		NAS 5-21394	2718
99	COLUMBIA UNIVERSITY	Levine, A. L.	GSFC	Burlingame, A.	NAS 5-22042	2719
99	COLUMBIA UNIVERSITY	Thaddeus, P.	GSFC	Foley, H. M.	NGL 33-008-182	2732
99	COLUMBIA UNIVERSITY	Carter, C. H.	HQ-PY	Robey, R. C.	NGT 33-008-013	2742
99	DARTMOUTH COLLEGE	Carter, C. H.	HQ-PY	Hornig, J. F.	NGT 30-001-003	2608
99	DUKE UNIVERSITY	Carter, C. H.	HQ-PY	Harmon, F.	NGT 34-001-003	2889
99	EMORY UNIVERSITY	Carter, C. H.	HQ-PY	Lester, C. T.	NGT 11-001-005	1824
99	FLORIDA STATE UNIV	Carter, C. H.	HQ-PY	Keirs, R. J.	NGT 10-004-008	1784
99	FORDHAM UNIVERSITY	Carter, C. H.	HQ-PY	Finley, J.	NGT 33-012-002	2793
99	GEORGE WASHINGTON U	Hamilton, J. T.	HQ-KT	Wright, P.	NASW 2444	1751
99	GEORGE WASHINGTON U		HQ-PA	Rothrock, A. M.	NSR 09-010-019	1762
99	GEORGE WASHINGTON U		HQ-PA	Rothrock, A. M.	NSR 09-010-021	1763
99	GEORGIA INST OF TECH	Vitale, J. A.	HQ-PY	Hansen, A. G.	NGR 11-002-081	1845
99	GEORGIA INST OF TECH	Carter, C. H.	HQ-PY	Webb, S. C.	NGT 11-002-006	1855
99	GEORGIA INST OF TECH	Vitale, J.	HQ-PY	Hansen, A. G.	NGT 11-002-064	1856
99	HARVARD UNIVERSITY	Carter, C. H.	HQ-PY	McFarland, R. A.	NGT 22-007-008	2244
99	HOWARD UNIVERSITY	Carter, C. H.	HQ-PY	Miller, C. L.	NGT 09-011-001	1775
99	ILL INST OF TECH	Carter, C. H.	HQ-PY	Grad, A.	NGT 14-004-002	1888
99	INDIANA U-BLOOMINGTN		HQ-KT		NASW 2353	1976
99	INDIANA U-BLOOMINGTN		HQ-KT		NASW 2467	1977
99	IOWA STATE UNIV	Carter, C. H.	HQ-PY	Zaffarano, D. J.	NGT 16-002-002	2023
99	JOHNS HOPKINS UNIV	Carter, C. H.	HQ-PY	Kimball, A. W.	NGT 21-001-004	2142
99	LEHIGH UNIVERSITY	Carter, C. H.	HQ-PY	Stout, R. D.	NGT 39-007-003	3062
99	MASS INST OF TECH	Silverman, D.	HQ-EC	Harrington, J. V.	NASW 2197	2302
99	MASS INST OF TECH	Redding, E. R.	HQ-PY	Harrington, J. V.	NGL 22-009-019	2315
99	MASS INST OF TECH	Redding, E. R.	HQ-PY	Harrington, J. V.	NGL 22-009-638	2330
99	MASS INST OF TECH	Rosenfeld, R. A.	HQ-RE	Guzman-Arenas, A.	NGR 22-009-535	2347
99	MASS INST OF TECH	Enders, J. H.	HQ-RO	Simpon, R.	NASW 2412	2304
99	MICHIGAN STATE UNIV	Carter, C. H.	HQ-PY	Minkel, C. W.	NGT 23-004-004	2421
99	MISSISSIPPI STATE U	Kent, M. I.	MSFC	Bouchillon, C. W.	NGL 25-001-032	2540
99	MISSISSIPPI STATE U	Mooneyhan, D. W.	MTF	Bouchillon, C. W.	NAS 9-13363	2538
99	MISSISSIPPI STATE U	Carter, C. H.	HQ-PY	McKee, J. C., Jr.	NGT 25-001-002	2543
99	NEW YORK UNIVERSITY	Jones, W. L.	LARC	Pierson, W. J.	NAS 1-10090	2803
99	NEW YORK UNIVERSITY	Carter, C. H.	HQ-PY	Ragazzini, J. R.	NGT 33-016-014	2822
99	NO DAKOTA STATE UNIV	Carter, C. H.	HQ-PY	Smith, G. S.	NGT 35-001-001	2926
99	NORTHEASTERN UNIV	Carter, C. H.	HQ-PY	Essigmann, M. W.	NGT 22-011-003	2388
99	NORTHWESTERN UNIV	Morris, J. D.	HQ-PY	Rubenstein, A. H.	NGL 14-007-062	1894
99	NORTHWESTERN UNIV	Carter, C. H.	HQ-PY	Baker, R. H.	NGT 14-007-004	1903
99	NORTHWESTERN UNIV	Brandon, F. D.	HQ-RM	Adnor, M. R.	NSR 14-007-103	1906
99	OHIO STATE UNIV	Carter, C. H.	HQ-PY	Roaden, A.	NGT 36-008-006	2979
99	OKLAHOMA STATE UNIV	Collin, E. E.	HQ-FE	Wiggins, K. E.	NASW 1964	3001
99	OLD DOMINION UNIV	Cone, C. D.	LARC		NAS 1-9434	3443
99	OREGON STATE UNIV	Carter, C. H.	HQ-PY	Hansen, H. P.	NGT 38-002-001	3020
99	PENNSYLVANIA STATE U	Redding, E. R.	HQ-PY	Ebaugh, P.	NGL 39-009-015	3074
99	PENNSYLVANIA STATE U	Carter, C. H.	HQ-PY	Howell, B. F., Jr.	NGT 39-009-011	3093

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APPENDIX B CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	ACC NO.
99	PENNSYLVANIA STATE U	Carter, C. H.	HQ-PY	Reethof, G.	NGT 39-009-141	3094
99	POLY INST BROOKLYN	Carter, C. H.	HQ-PY	Giordano, A. B.	NGT 33-006-003	2828
99	PRATT INSTITUTE		HQ-FE	Heindel, R. H.	NASR 199	2829
99	PRINCETON UNIVERSITY	Carter, C. H.	HQ-PY	Pittendrigh, C. S.	NGT 31-001-009	2671
99	PURDUE UNIVERSITY	Fihelly, A. W.	GSFC	Hoffer, R. M.	NAS 5-21880	1987
99	PURDUE UNIVERSITY	Carter, C. H.	HQ-PY	Andrews, F. N.	NGT 15-005-005	2010
99	PURDUE UNIVERSITY	Carter, C. H.	HQ-PY	Waling, J. L.	NGT 15-005-061	2011
99	RENSSELAER POLY-NY	Carter, C. H.	HQ-PY	Wiberley, S. E.	NGT 33-018-010	2840
99	RICE UNIVERSITY	Redding, E. R.	HQ-PY	Stebbing, R. F.	NGL 44-006-033	3222
99	RICE UNIVERSITY	Carter, C. H.	HQ-PY	Gordon, W. E.	NGT 44-006-003	3231
99	RUTGERS U-N BRUNSWK	Carter, C. H.	HQ-PY	Torrey, H. C.	NGT 31-004-002	2677
99	ST LOUIS UNIVERSITY	Carter, C. H.	HQ-PY	Eigel, E. G., Jr.	NGT 26-006-001	2551
99	SOUTHEASTN STATE COL	Holley, H. L.	HQ-KT	Gold, C. H.	NASW 2379	3003
99	SOUTHEASTN STATE COL		HQ-KT		NASW 2512	3004
99	SOUTHERN METHODIST U	Redding, E. R.	HQ-PY	Denton, J. C.	NGL 44-007-006	3233
99	SOUTHERN METHODIST U	Carter, C. H.	HQ-PY	Albritton, C. C., Jr.	NGT 44-007-002	3239
99	STANFORD UNIVERSITY		HQ-KT		NASW 2216	1297
99	STANFORD UNIVERSITY	Carter, C. H.	HQ-PY	Moses, L.	NGT 05-020-016	1365
99	STANFORD UNIVERSITY	Carter, C. H.	HQ-PY	Pettit, J. M.	NGT 05-020-228	1366
99	STANFORD UNIVERSITY	Carter, C. H.	HQ-PY	Pettit, J. M.	NGT 05-020-295	1367
99	SYRACUSE UNIVERSITY	Carter, C. H.	HQ-PY	Hough, W. H.	NGT 33-022-005	2877
99	SYRACUSE UNIVERSITY	Carter, C. H.	HQ-PY	Honey, J. C.	NGT 33-022-097	2878
99	TEXAS A&M UNIVERSITY	Johnston, D.	JSC	Hartley, H. O.	NGR 44-001-095	3265
99	TEXAS TECH UNIV	Carter, C. H.	HQ-PY	Graves, L.	NGT 44-011-001	3279
99	TULANE UNIVERSITY	Carter, C. H.	HQ-PY	Deener, D. R.	NGT 19-002-002	2118
99	UNIV ALA-HUNTSVILLE	Redding, E. R.	HQ-PY	Rush, J. E.	NGL 01-008-001	1073
99	UNIV ALA-TUSCALOOSA	Redding, E. R.	HQ-PY	Whitchurst, R.	NGL 01-002-064	1088
99	UNIV ALA-TUSCALOOSA	Carter, C. H.	HQ-PY	Rodgers, E.	NGT 01-002-002	1089
99	UNIV ALASKA-FAIRBNKS	Carter, C. H.	HQ-PY	Rae, K. M.	NGT 02-001-007	1108
99	UNIV OF ARIZONA	Stonesifer, G. R.	GSFC	Slater, P. N.	NAS 5-21849	1126
99	UNIV OF ARIZONA	Carter, C. H.	HQ-PY	Rhodes, H. D.	NGT 03-002-008	1171
99	UNIV CALIF-BERKELEY	Quinn, H. B.	HQ-PY	Anderson, K. A.	NGL 05-003-012	1394
99	UNIV CALIF-BERKELEY	Redding, E. R.	HQ-PY	Anderson, K. A.	NGL 05-003-497	1406
99	UNIV CALIF-BERKELEY	Carter, C. H.	HQ-PY	Elberg, S. S.	NGT 05-003-023	1442
99	UNIV CALIF-L ANGELES	Redding, E. R.	HQ-PY	Libby, W. F.	NGL 05-007-003	1482
99	UNIV CALIF-L ANGELES	Carter, C. H.	HQ-PY	Libby, W. F.	NGT 05-007-019	1517
99	UNIV CALIF-SAN DIEGO	Carter, C. H.	HQ-PY	York, H. F.	NGT 05-009-008	1568
99	UNIV OF CHICAGO	Redding, E. R.	HQ-PY	Simpson, J. A.	NGL 14-001-258	1927
99	UNIV OF CHICAGO	Carter, C. H.	HQ-PY	O'Connell, C. D.	NGT 14-001-015	1947
99	UNIV OF CHICAGO	Harrison, H. H.	HQ-NS	Cohen, M.	NGL 14-001-009	1920
99	UNIV OF CINCINNATI	Redding, E. R.	HQ-PY	Guston, R. L.	NGL 36-004-014	2984
99	UNIV OF CINCINNATI	Carter, C. H.	HQ-PY	Wessel, R. H.	NGT 36-004-003	2993
99	UNIV OF CONNECTICUT	Carlson, J. M.	HQ-KT		NASW 2307	1697
99	UNIV OF CONNECTICUT		HQ-KT		NASW 2516	1698
99	UNIV OF DELAWARE	Carter, C. H.	HQ-PY	Kilpatrick, F. P.	NGT 08-001-002	1730
99	UNIV OF DENVER	Orrick, D. W.	HQ-KT	Kottenstette, J. P.	NASW 2358	1678
99	UNIV OF DENVER	Orrick, D. W.	HQ-KT	Kottenstette, J. P.	NASW 2362	1679
99	UNIV OF DENVER	Glassman, S. J.	HQ-KT	Kottenstette, J. P.	NSR 06-004-063	1689
99	UNIV OF DENVER	Vitale, J. A.	HQ-PY	Ezra, A. A.	NGL 06-004-078	1680
99	UNIV OF DENVER	Carter, C. H.	HQ-PY	Evers, N. H.	NGT 06-004-008	1688
99	UNIV OF FLORIDA	Redding, E. R.	HQ-PY	Grinter, L. E.	NGL 10-005-005	1795
99	UNIV OF GEORGIA	Carlson, J. M.	HQ-KT	Park, M. K.	NASW 2401	1860
99	UNIV OF HAWAII	Pirtle, M. W.	ARC	Lichenberger, W.	NAS 2-6700	1865
99	UNIV OF HAWAII	Carter, C. H.	HQ-PY	Gorter, W.	NGT 12-001-005	1879
99	UNIV OF HOUSTON	Huntoon, H. H.	JSC	Zuckerman, J. V.	NAS 9-11276	3289
99	UNIV OF HOUSTON	Cotton, P.	JSC	Zuckerman, J. V.	NAS 9-12217	3294
99	UNIV OF HOUSTON	Redding, E. R.	HQ-PY	Allred, J. C.	NGL 44-005-021	3305
99	UNIV ILLINOIS-URBANA	Carter, C. H.	HQ-PY	Alpert, D.	NGT 14-005-017	1972

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	GRANT/ CONTRACT NUMBER	ACC NO.
99	UNIV ILLINOIS-URBANA	Schmerling, E. R.	HQ-SG	Deschamps, G. A.	NGR 14-005-009	1956
99	UNIV OF IOWA	Carter, C. H.	HQ-PY	Spriesterbach, D. C.	NGT 16-001-004	2046
99	UNIV OF KANSAS	Jones, W. L.	LARC	Moore, R. K.	NAS 1-10048	2048
99	UNIV OF KANSAS	Redding, E. R.	HQ-PY	Barr, B. G.	NGL 17-002-001	2057
99	UNIV OF KANSAS	Carter, C. H.	HQ-PY	Ellermeier, R. D.	NGT 17-002-006	2068
99	UNIV OF KANSAS	Carter, C. H.	HQ-PY	Smith, W. P.	NGT 17-002-044	2069
99	UNIV MARYLAND-COL PK	Alford, W. L.	GSFC	Deutsch, E. S.	NGR 21-002-351	2188
99	UNIV MARYLAND-COL PK		GSFC	Weidner, J. R.	NGR 21-002-399	2195
99	UNIV MARYLAND-COL PK	Quinn, H. B.	HQ-PY	Rheindolt, W. C.	NGL 21-002-008	2151
99	UNIV MD-EASTRN SHORE	Floyd, J. C.	WS		NAS 6-2067	2198
99	UNIV OF MIAMI	Carlson, J. M.	HQ-KT	Harvey, M. L.	NSR 10-007-087	1816
99	UNIV OF MIAMI	Redding, E. R.	HQ-PY	Man, E. H.	NGL 10-007-010	1807
99	UNIV OF MIAMI	Carter, C. H.	HQ-PY	Harvey, M. L.	NGT 10-007-077	1815
99	UNIV MICH-ANN ARBOR	Johnson, I. L.	JSC	Powers, W. F.	NAS 9-12872	2447
99	UNIV MICH-ANN ARBOR	Adams, J. A.	LARC	Howe, R. M.	NSR 23-005-364	2482
99	UNIV MICH-ANN ARBOR	Carter, C. H.	HQ-PY	Hay, G. E.	NGT 23-005-018	2481
99	U MINN-MNPLS-ST PAUL	Carter, C. H.	HQ-PY	Crawford, B., Jr.	NGT 24-005-012	2524
99	U MINN-MNPLS-ST PAUL	Carter, C. H.	HQ-PY	Anderson, G. W.	NGT 24-005-078	2525
99	UNIV NEBRASKA-LINCLN	Thorne, M.	HQ-FE	Kopp, O. W.	NASW 2213	2593
99	UNIV OF NEVADA-RENO	Carter, C. H.	HQ-PY	O'Brien, T. D.	NGT 29-001-002	2600
99	UNIV OF NEW MEXICO	Carlson, J. M.	HQ-KT		NASW 2275	2697
99	UNIV OF NEW MEXICO	Holley, H. L.	HQ-KT	Shinnick, W. A.	NASW 2399	2698
99	UNIV OF NEW MEXICO	Carter, C. H.	HQ-PY	Steger, A.	NGT 32-004-004	2706
99	UNIV N CAR-CHPL HILL	Carter, C. H.	HQ-PY	Ingram, J. C.	NGT 34-003-001	2923
99	UNIV OF NOTRE DAME	Carter, C. H.	HQ-PY	Beichner, P. E.	NGT 15-004-002	2018
99	UNIV OF PITTSBURGH	Carlson, J. M.	HQ-KT		NASW 2291	3104
99	UNIV OF PITTSBURGH		HQ-KT	Kent, A.	NSR 39-011-064	3119
99	UNIV OF PITTSBURGH		HQ-KT		NSR 39-011-074	3120
99	UNIV OF PITTSBURGH	Carter, C. H.	HQ-PY	Stone, D. C.	NGT 39-011-075	3118
99	UNIV OF PITTSBURGH	Allenby, R. J.	HQ-SM	Mitroff, I.	NGL 39-011-080	3108
99	UNIV OF SO FLORIDA		HQ-FE		NAS10-2948	1817
99	UNIV OF SOUTHERN CAL	Carlson, J. M.	HQ-KT	Ehrenreich, J. W.	NASW 1869	1605
99	UNIV OF SOUTHERN CAL	Holley, H. L.	HQ-KT		NASW 2360	1606
99	UNIV OF SOUTHERN CAL	Redding, E. R.	HQ-PY	Bichael, H.	NGL 05-018-044	1608
99	UNIV OF SOUTHERN CAL	Carter, C. H.	HQ-PY	Reining, H., Jr.	NGT 05-018-085	1617
99	UNIV TENNESSEE-KNOXV	Redding, E. R.	HQ-PY	Thomas, C. O.	NGL 43-001-021	3166
99	UNIV TENNESSEE-KNOXV	Carter, C. H.	HQ-PY	Smith, H. A.	NGT 43-001-002	3179
99	UNIV TEXAS-AUSTIN	Carter, C. H.	HQ-PY	Ellison, F. P.	NGT 44-012-009	3351
99	UNIV TEXAS-DALLAS	Redding, E. R.	HQ-PY	Johnson, F. S.	NGL 44-004-130	3375
99	UNIV OF VERMONT	Carter, C. H.	HQ-PY	Johnstone, D. B.	NGT 46-001-001	3428
99	UNIV OF VIRGINIA	Bertsch, D. L.	GSFC	Frederick, L. W.	NAS 5-21412	3468
99	UNIV OF VIRGINIA	Carter, C. H.	HQ-PY	Whitehead, W. D.	NGT 47-005-005	3487
99	UNIV OF WASHINGTON	Carter, C. H.	HQ-PY	McCarthy, J. L.	NGT 48-002-007	3553
99	WASHINGTON UNIVERSTY	Silverman, D.	HQ-EC	Morgan, R. P.	NGL 26-008-054	2578
99	WASHINGTON UNIVERSTY	Carter, C. H.	HQ-PY	Morrow, R. E.	NGT 26-008-005	2583
99	WAYNE STATE UNIV		HQ-KT	Prince, B. W.	NSR 23-006-037	2489
99	WAYNE STATE UNIV	Carter, C. H.	HQ-PY	Burnham, F. B.	NGT 23-006-001	2488
99	WEST VIRGINIA UNIV	Quinn, H. B.	HQ-PY	Wilson, M. F.	NGL 49-001-001	3554

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APPENDIX C

CROSS INDEX BY TECHNICAL OFFICER LOCATION

Technical Officers are usually located at the NASA installation funding a particular grant or contract. Abbreviations used for locations are: ARC, Ames Research Center; FRC, Flight Research Center; GSFC, Goddard Space Flight Center; KSC, Kennedy Space Center, JSC, Johnson Space Center; LARC, Langley Research Center; LERC, Lewis Research Center; MSFC, Marshall Space Flight Center; WS, Wallops Station and HQ, Headquarters. The HQ designator carries suffixed letters identifying individual Headquarters offices; an explanation of these identifiers and full addresses for all installations may be found in the prefatory pages. The key for the "Field Code" column is in Appendix B.

TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
ARC		ARIZONA STATE UNIV	NAS 2-2640		13	1109
ARC	Haines, R. F.	BAYLOR UNIV-MED COL	NGR 44-003-057	Decker, T. A.	51	3202
ARC	Patton, R. M.	BAYLOR UNIV-MED COL	NGR 44-003-057	Decker, T. A.	51	3202
ARC	Bader, M.	BOSTON COLLEGE	NGR 22-003-018	Eather, R. H.	32	2203
ARC	Haughney, L. C.	BOSTON COLLEGE	NGR 22-003-018	Eather, R. H.	32	2203
ARC	Haughney, L. C.	BOSTON COLLEGE	NGR 22-003-027	Eather, R. H.	31	2205
ARC	Miquel, J.	BOWLING GRN STATE U	NAS 2-6067	Oster, I. I.	51	2927
ARC	Tremor, J. W.	BOWLING GRN STATE U	NAS 2-6067	Oster, I. I.	51	2927
ARC	Doolin, B. F.	BROWN UNIVERSITY	NGL 40-002-015	Lasalle, J. P.	21	3122
ARC	Hansen, F. C.	BROWN UNIVERSITY	NGL 40-002-059	Mason, E. A.	12	3124
ARC	Patton, M.	BRYN MAWR COLLEGE	NGR 39-018-002	Yarczower, M.	59	3032
ARC	Hall, C. F.	CALIF INST OF TECH	NAS 2-5606	Munch, G.	13	1178
ARC	Hall, C. F.	CALIF INST OF TECH	NAS 2-6556	Munch, G.	13	1179
ARC	Spahr, J. R.	CALIF INST OF TECH	NAS 2-6556	Munch, G.	13	1179
ARC	Mihalov, J. D.	CALIF INST OF TECH	NAS 2-6740	Intriligator, D. S.	19	1180
ARC	Wolfe, J. H.	CALIF INST OF TECH	NAS 2-6740	Intriligator, D. S.	19	1180
ARC	Murphy, J.	CALIF INST OF TECH	NGL 05-002-229	Cole, D.	41	1209
ARC	Winter, D.	CALIF INST OF TECH	NGR 05-002-031	Strumwasser, F.	51	1210
ARC	Aiken, T. N.	CALIF INST OF TECH	NGR 05-002-239	Harris, G. L.	41	1225
ARC	Cameron, R. M.	CALIF INST OF TECH	NGR 05-002-281	Werner, M. W.	11	1229
ARC	Gillespie, C. M.	CALIF INST OF TECH	NGR 05-002-281	Werner, M. W.	11	1229
ARC	Johnson, R. D.	CALIF INST OF TECH	NGR 05-002-308	Horowitz, N. H.	51	1234
ARC	Kvenvolden, K. A.	CALIF INST OF TECH	NGR 05-002-310	Bonner, J.	59	1235
ARC	Boese, R. W.	CAL STATE U-CHICO	NGL 05-076-001	Regas, J. L.	11	1240
ARC		CAL STATE U-SAN FRAN	NAS 2-2216		51	1251
ARC	Gloria, H. R.	CAL STATE U-SAN JOSE	NAS 2-7616	Miller, A.	31	1252
ARC	Stewart, J. D.	CAL STATE U-SAN JOSE	NGL 05-046-002	Clarke, B.	59	1253
ARC	Wydeven, T. J.	CAL STATE U-SAN JOSE	NGR 05-046-011	Spitze, L. A.	12	1254
ARC	Arvesen, J. C.	CAL STATE U-SAN JOSE	NGR 05-046-015	Weaver, E. C.	39	1255
ARC	Millard, J. P.	CAL STATE U-SAN JOSE	NGR 05-046-015	Weaver, E. C.	39	1255
ARC	Whitten, R. C.	CAL STATE U-SAN JOSE	NGR 05-046-020	Miller, A.	31	1256
ARC	Quattrone, P. D.	CASE WESTERN RESERVE	NGR 36-027-050	Yeager, E.	12	2943
ARC	Quattrone, P. D.	CASE WESTERN RESERVE	NGR 36-027-052	Yeager, E.	12	2945
ARC	Sandler, H.	CASE WESTERN RESERVE	NGR 36-027-053	Ko, W. H.	53	2946
ARC	MacElroy, R. D.	CATHOLIC UNIVERSITY	NGR 09-005-098	Decicco, B. T.	51	1741
ARC	Bell, N. L.	COLORADO STATE UNIV	NAS 2-6585	Adam, D. D.	51	1625
ARC	Sebesta, P. D.	COLORADO STATE UNIV	NAS 2-6585	Adam, D. D.	51	1625
ARC	Tremor, J. W.	COLORADO STATE UNIV	NAS 2-6615	Baker, R.	51	1626
ARC	Wempe, T. E.	COLORADO STATE UNIV	NAS 2-7396	Cermak, J. E.	49	1627
ARC	Kirkpatrick, J. P.	COLORADO STATE UNIV	NGR 06-002-127	Jones, T. B.	46	1644

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
ARC	Wilbur, A. C.	COLORADO STATE UNIV	NGR 06-002-127	Jones, T. B.	46	1644
ARC	Klein, H. P.	COLORADO STATE UNIV	NGR 06-002-166	Ogg, J. E.	51	1647
ARC	Winter, D. L.	COLORADO STATE UNIV	NGR 06-002-166	Ogg, J. E.	51	1647
ARC	Hoffman, L. B.	CORNELL UNIVERSITY	NAS 2-5643	Jellnik, F.	45	2744
ARC	Tremor, J. W.	CORNELL UNIVERSITY	NAS 2-6065	Steward, F. C.	51	2745
ARC	Cameron, R. M.	CORNELL UNIVERSITY	NGR 33-010-081	Houck, J. R.	11	2766
ARC	Gillespie, C. M.	CORNELL UNIVERSITY	NGR 33-010-081	Houck, J. R.	11	2766
ARC	Mason, R. H.	CORNELL UNIVERSITY	NGR 33-010-146	Harwit, M. O.	11	2772
ARC	Cameron, R. M.	CORNELL UNIVERSITY	NGR 33-010-146	Harwit, M. O.	11	2772
ARC	Sandler, H.	CORNELL UNIVERSITY	NGR 33-010-179	Reis, D. J.	53	2777
ARC	Mason, R. H.	CORNELL UNIVERSITY	NGR 33-010-182	Houck, J. R.	11	2778
ARC	Cameron, R. M.	CORNELL UNIVERSITY	NGR 33-010-182	Houck, J. R.	11	2778
ARC	Winter, D. L.	DARTMOUTH COLLEGE	NGR 30-001-001	Lyon, C. J.	51	2604
ARC	Hall, C. F.	DUDLEY OBSERVATORY	NAS 2-5610	Weinberg, J. L.	11	2782
ARC	Hall, C. F.	DUDLEY OBSERVATORY	NAS 2-6560	Weinberg, J. L.	11	2783
ARC	Harmaker, W. E.	DUKE UNIVERSITY	NAS 2-7655	Vogel, F. S.	53	2885
ARC	Winter, D. L.	EMORY UNIVERSITY	NGR 11-001-012	Perachio, H. A.	61	1821
ARC	Winter, D. L.	EMORY UNIVERSITY	NGR 11-001-016	Bourne, G. H.	51	1822
ARC	Anliker, J. E.	EMORY UNIVERSITY	NGR 11-001-045	Perachio, A. A.	51	1823
ARC	Mandel, A. D.	GEORGETOWN UNIV	NGR 09-009-024	Gray, I.	52	1766
ARC	Morse, H. A.	GEORGIA INST OF TECH	NAS 2-6340	Wu, J.	41	1826
ARC	Dunlap, W. A.	HARVARD UNIVERSITY	NAS 2-6644	Tashjian, A. H.	51	2218
ARC	Leavitt, W. F.	HARVARD UNIVERSITY	NGL 22-007-053	Burgess, W. A.	59	2224
ARC	Young, D.	HARVARD UNIVERSITY	NGL 22-007-101	Hegstid, D. M.	59	2226
ARC	Billiman, K.	HARVARD UNIVERSITY	NGL 22-007-117	Bloembergen, N.	13	2227
ARC	Young, D. R.	HARVARD UNIVERSITY	NGR 22-007-256	Tashjian, A. H., Jr.	53	2243
ARC	Sandler, H.	HOWARD UNIVERSITY	NGL 09-011-017	Hawthorne, E. W.	53	1768
ARC	Weisoman, N. W.	INDIANA U-BLOOMINGTN	NGR 15-003-007	Neff, W. D.	51	1981
ARC	Kutler, P.	IOWA STATE UNIV	NGR 16-002-029	Vogel, J. M.	41	2020
ARC	Lomax, H.	IOWA STATE UNIV	NGR 16-002-029	Vogel, J. M.	41	2020
ARC	Rakich, J. V.	IOWA STATE UNIV	NGR 16-002-038	Tannehill, J. C.	21	2022
ARC	Patton, R. M.	JOHNS HOPKINS UNIV	NGR 21-001-107	Findley, J. D.	62	2138
ARC	Patton, R. M.	JOHNS HOPKINS UNIV	NGR 21-001-111	Findley, J. D.	62	2139
ARC	Winget, C. M.	MASS INST OF TECH	NAS 2-5951	Bowditch, P. N.	51	2253
ARC	Ormiston, R. A.	MASS INST OF TECH	NAS 2-6175	Tong, P.	41	2254
ARC	Morse, H. A.	MASS INST OF TECH	NAS 2-6175	Tong, P.	41	2254
ARC	Bretol, R. N.	MASS INST OF TECH	NAS 2-6437	Schlundt, R. W.	41	2255
ARC	Johnson, N. S.	MASS INST OF TECH	NAS 2-6437	Schlundt, R. W.	41	2255
ARC	Rabbott, J. P., Jr.	MASS INST OF TECH	NAS 2-7262	Ham, N. D.	41	2256
ARC	Johnson, W. R.	MASS INST OF TECH	NAS 2-7262	Ham, N. D.	41	2256
ARC	Hrudy, R. J.	MASS INST OF TECH	NAS 2-7439	Gilmore, J. P.	42	2257
ARC	Rabbott, J. P., Jr.	MASS INST OF TECH	NAS 2-7620	Simpson, R. W.	41	2258
ARC		MASS INST OF TECH	NAS 2-7648		45	2259
ARC	Schmitz, F. H.	MASS INST OF TECH	NAS 2-7684	Widnall, S. E.	41	2260
ARC	Boxwell, D. A.	MASS INST OF TECH	NAS 2-7684	Widnall, S. E.	41	2260
ARC	Quattroue, P. D.	MASS INST OF TECH	NAS12-2265	Yankovitch, D.	59	2307
ARC	Chambers, A. B.	MASS INST OF TECH	NAS12-2265	Yankovitch, D.	59	2307
ARC	Sadoff, M.	MASS INST OF TECH	NGL 22-009-002	Sheridan, T. B.	45	2308
ARC	Lumb, D. R.	MASS INST OF TECH	NGL 22-009-013	Kennedy, R. S.	13	2311
ARC	Sadoff, M.	MASS INST OF TECH	NGL 22-009-025	Young, L. R.	41	2316
ARC	Erzberger, H.	MASS INST OF TECH	NGL 22-009-124	Newton, G. C., Jr.	49	2317
ARC	Doolin, B. F.	MASS INST OF TECH	NGL 22-009-124	Newton, G. C., Jr.	49	2317
ARC	Anliker, J. E.	MASS INST OF TECH	NGL 22-009-304	Burns, S. K.	45	2321
ARC	Daunton, N. G.	MASS INST OF TECH	NGL 22-009-308	Tauber, H.	59	2322
ARC	Quattrone, P. D.	MASS INST OF TECH	NGR 22-009-312	Reid, R. C.	12	2337
ARC	Corsiglia, V. R.	MASS INST OF TECH	NGR 22-009-605	Widnall, S. E.	41	2353
ARC	Rossow, V. J.	MASS INST OF TECH	NGR 22-009-605	Widnall, S. E.	41	2353
ARC	Vernikos Danell, J.	MASS INST OF TECH	NGR 22-009-627	Wurtman, R. J.	52	2358

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ARC	Winget, C. M.	MASS INST OF TECH	NGR 22-009-627	Wurtman, R. J.	52	2358
ARC	Cameron, R. M.	MASS INST OF TECH	NGR 22-009-718	Mc Lord, T. B.	11	2366
ARC	Gillespie, J. M., Jr.	MASS INST OF TECH	NGR 22-009-718	Mc Lord, T. B.	11	2366
ARC	Quattrone, P. D.	MASS INST OF TECH	NGR 22-009-723	Reid, R. C.	12	2367
ARC	Winter, D. L.	MASS INST OF TECH	NGR 22-009-726	Schmitt, F. O.	59	2368
ARC	Billingham, J.	MASS INST OF TECH	NGR 22-009-726	Schmitt, F. O.	59	2368
ARC	Wempe, T.	MASS INST OF TECH	NGR 22-009-733	Curry, R. E.	59	2371
ARC	Harrison, G. A.	MT SINAI SCH OF MED	NGR 33-202-001	Rule, A. H.	51	2800
ARC	Yetka, N. D.	NEW MEX ST U-LAS CR	NAS 2-5795	Bumgarner, R. A.	42	2681
ARC	Van Ness, J. C.	NEW MEX ST U-LAS CR	NAS 2-6484	Lawrence, H. R.	49	2682
ARC	Gabris, E. A.	NEW MEX ST U-LAS CR	NAS 2-6484	Lawrence, H. R.	49	2682
ARC	McCroskey, W. J.	NEW YORK UNIVERSITY	NAS 2-6813	Isom, M. P.	41	2805
ARC	Caradonna, F. X.	NEW YORK UNIVERSITY	NAS 2-6813	Isom, M. P.	41	2805
ARC	Hicks, R. M.	NEW YORK UNIVERSITY	NGR 33-016-201	Garabedian, P. R.	41	2821
ARC	Dunlap, W. A.	NO CAROLINA STATE U	NAS 2-6684	Grosch, D. S.	51	2895
ARC	Williams, D. P.	NO CAROLINA STATE U	NGR 34-002-175	Benson, R. B.	47	2909
ARC	Anliker, J. E.	NORTHEASTERN UNIV	NGR 22-011-070	Terman, M.	61	2384
ARC	Oyama, J.	OHIO STATE UNIV	NAS 2-6634	Clarke, D. L.	53	2956
ARC	Mehler, W.	OHIO STATE UNIV	NAS 2-6634	Clarke, D. L.	53	2956
ARC	Morse, H. A.	OHIO STATE UNIV	NAS 2-6779	Velkoff, H. R.	41	2957
ARC	McCroskey, W. J.	OHIO STATE UNIV	NAS 2-6779	Velkoff, H. R.	41	2957
ARC	Oyama, J.	OHIO STATE UNIV	NAS 2-6792	Lim, D. J.	53	2958
ARC	Leon, H. A.	OHIO STATE UNIV	NGR 36-008-004	Weiss, H. S.	59	2969
ARC	Danellis, J. V.	OHIO STATE UNIV	NGR 36-008-168	Marks, B. M.	53	2974
ARC	Sandler, H.	OHIO STATE UNIV	NGR 36-008-193	Wells, M. K.	52	2977
ARC	Miller, S. A.	OKLAHOMA STATE UNIV	NAS 2-7273	Wiggins, K.	79	3000
ARC	King, L. D.	OKLAHOMA STATE UNIV	NAS 2-7273	Wiggins, K.	79	3000
ARC	Borgman, D. C.	PENNSYLVANIA STATE U	NAS 2-6312	Arndt, R. A.	41	3064
ARC	Morse, H. A.	PENNSYLVANIA STATE U	NAS 2-6312	Arndt, R. A.	41	3064
ARC	Smith, G. A.	PENNSYLVANIA STATE U	NGL 39-009-023	Shearer, J. L.	49	3075
ARC	Wydeven, T.	PENNSYLVANIA STATE U	NGR 39-009-123	Engel, A. J.	43	3081
ARC	Kourtides, D. A.	PRINCETON UNIVERSITY	NAS 2-6705	Sirignano, W. A.	13	2626
ARC	Parker, J. A.	PRINCETON UNIVERSITY	NAS 2-6705	Sirignano, W. A.	13	2626
ARC	Corliss, L. D.	PRINCETON UNIVERSITY	NAS 2-7187	Durbin, E. J.	41	2627
ARC	Gossett, T. D.	PRINCETON UNIVERSITY	NAS 2-7187	Durbin, E. J.	41	2627
ARC	Franklin, J. A.	PRINCETON UNIVERSITY	NAS 2-7350	Seckel, E.	41	2628
ARC	Ormiston, R. A.	PRINCETON UNIVERSITY	NAS 2-7615	Dowell, E. H.	41	2629
ARC	Morse, H. A.	PRINCETON UNIVERSITY	NAS 2-7615	Dowell, E. H.	41	2629
ARC	Gaspers, P. A., Jr.	PRINCETON UNIVERSITY	NGR 31-001-197	Dowell, E. H.	41	2654
ARC	Smith, G. A.	PRINCETON UNIVERSITY	NGR 31-001-277	Durbin, E. J.	41	2669
ARC	Meyer, G.	PRINCETON UNIVERSITY	NGR 31-001-277	Durbin, E. J.	41	2669
ARC	Green, M. J.	PURDUE UNIVERSITY	NAS 2-6802	Dewitt, D. P.	47	1984
ARC	Howe, J. T.	PURDUE UNIVERSITY	NAS 2-6802	Dewitt, D. P.	47	1984
ARC	Stine, H. A.	PURDUE UNIVERSITY	NGR 15-005-129	Incropera, F. P.	19	2002
ARC	Gregory, T. J.	PURDUE UNIVERSITY	NGR 15-005-180	Garrett, R. E.	49	2009
ARC	Grant, T. L.	RENSSELAER POLY-NY	NGR 33-018-188	Modestino, J. W.	31	2839
ARC	De'Vincenza, D.	RICE UNIVERSITY	NAS 2-6614	Ward, C. H.	51	3211
ARC	Williams, B. A.	ST LOUIS UNIVERSITY	NGR 26-006-039	Von Beaumont, W.	51	2550
ARC	Greenleaf, J. E.	ST LOUIS UNIVERSITY	NGR 26-006-039	Von Beaumont, W.	51	2550
ARC		STANFORD UNIVERSITY	NAS 2-1677		51	1261
ARC		STANFORD UNIVERSITY	NAS 2-1750		42	1262
ARC		STANFORD UNIVERSITY	NAS 2-2320		51	1263
ARC		STANFORD UNIVERSITY	NAS 2-3303		41	1264
ARC	Hall, C. F.	STANFORD UNIVERSITY	NAS 2-4671	Von Eshleman, V. R.	13	1265
ARC	Nunamaker, R. R.	STANFORD UNIVERSITY	NAS 2-4671	Von Eshleman, V. R.	13	1265
ARC	Yaggy, P. F.	STANFORD UNIVERSITY	NAS 2-5143	Bryson, A. E., Jr.	41	1266
ARC	Tremor, J. W.	STANFORD UNIVERSITY	NAS 2-5587	Pittendrigh, C. S.	51	1267
ARC	Vause, C. R.	STANFORD UNIVERSITY	NAS 2-6158	Karamcheti, K. K.	41	1268

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ARC	Schmitz, F. H.	STANFORD UNIVERSITY	NAS 2-6158	Karamcheti, K. K.	41	1266
ARC	Winget, C. M.	STANFORD UNIVERSITY	NAS 2-6217	Davidson, J.	59	1266
ARC	Danellis, J. V.	STANFORD UNIVERSITY	NAS 2-6217	Davidson, J.	59	1266
ARC	Oyama, J.	STANFORD UNIVERSITY	NAS 2-6234	Bensch, K. G.	42	1270
ARC	Platt, W. T.	STANFORD UNIVERSITY	NAS 2-6234	Bensch, K. G.	42	1270
ARC	Miquel, J.	STANFORD UNIVERSITY	NAS 2-6332	Herman, M. M.	59	1271
ARC	Hewitt, J. E.	STANFORD UNIVERSITY	NAS 2-6332	Herman, M. M.	59	1271
ARC	Donaldson, R. W.	STANFORD UNIVERSITY	NAS 2-6491	Wise, K. D.	45	1272
ARC	Tombs, N. C.	STANFORD UNIVERSITY	NAS 2-6491	Wise, K. D.	45	1272
ARC	Miquel, J.	STANFORD UNIVERSITY	NAS 2-6706	Bensch, K. G.	51	1273
ARC	Grant, T.	STANFORD UNIVERSITY	NAS 2-7126	Von Eshleman, V. R.	31	1274
ARC	Kenyon, G. C.	STANFORD UNIVERSITY	NAS 2-7199	Shevill, R. S.	49	1275
ARC	Galloway, T. L.	STANFORD UNIVERSITY	NAS 2-7199	Shevill, R. S.	49	1275
ARC	Dunlap, W. A.	STANFORD UNIVERSITY	NAS 2-7205	Snyder, S. B.	59	1276
ARC	Danellis, J.	STANFORD UNIVERSITY	NAS 2-7637	Barchas, J. D.	53	1277
ARC	Doolin, B. F.	STANFORD UNIVERSITY	NGL 05-020-007	Bryson, A. E.	41	1298
ARC	Stewart, E.	STANFORD UNIVERSITY	NGL 05-020-073	Kalman, R. E.	49	1302
ARC	Sandler, H.	STANFORD UNIVERSITY	NGL 05-020-223	Anliker, M.	13	1307
ARC	Ponnamperuma, C. A.	STANFORD UNIVERSITY	NGL 05-020-250	Kuhlmann, K. F.	12	1311
ARC	Sandler, H.	STANFORD UNIVERSITY	NGL 05-020-305	Harrison, D. C.	52	1314
ARC	Ernikos-Danellis, J. V.	STANFORD UNIVERSITY	NGL 05-020-326	Levine, S.	52	1315
ARC	Fryer, T. B.	STANFORD UNIVERSITY	NGL 05-020-401	Angell, J. B.	46	1317
ARC	Chapman, D. R.	STANFORD UNIVERSITY	NGL 05-020-420	Ferziger, J.	46	1318
ARC	Kvenvolden, K. A.	STANFORD UNIVERSITY	NGL 05-020-582	Bonner, W. A.	59	1320
ARC	Ponnamferuma, C. A.	STANFORD UNIVERSITY	NGR 05-020-335	Giese, A. C.	12	1328
ARC	Jones, J. L.	STANFORD UNIVERSITY	NGR 05-020-345	Adams, J. L.	49	1329
ARC	Chang, S.	STANFORD UNIVERSITY	NGR 05-020-405	Loew, G. H.	59	1330
ARC	Kvenvolden, K. A.	STANFORD UNIVERSITY	NGR 05-020-405	Loew, G. H.	59	1330
ARC	Mehler, W. R.	STANFORD UNIVERSITY	NGR 05-020-435	Chow, K. L.	59	1332
ARC	Greenleaf, J. E.	STANFORD UNIVERSITY	NGR 05-020-456	Luetscher, J. A.	53	1334
ARC	Billingham, J.	STANFORD UNIVERSITY	NGR 05-020-514	Taube, H.	12	1338
ARC	Leon, H.	STANFORD UNIVERSITY	NGR 05-020-514	Taube, H.	12	1338
ARC	Kelley, M.	STANFORD UNIVERSITY	NGR 05-020-526	Bryson, A. R.	41	1339
ARC	Donaldson, R.	STANFORD UNIVERSITY	NGR 05-020-543	Angell, J. B.	19	1342
ARC	Tanner, T. A., Jr.	STANFORD UNIVERSITY	NGR 05-020-547	Atkinson, R. C.	69	1343
ARC	Patton, R. M.	STANFORD UNIVERSITY	NGR 05-020-547	Atkinson, R. C.	69	1343
ARC	Williams, D. P.	STANFORD UNIVERSITY	NGR 05-020-549	Tiller, W. A.	47	1344
ARC	Nelson, H. G.	STANFORD UNIVERSITY	NGR 05-020-549	Tiller, W. A.	47	1344
ARC	Poppa, H. R.	STANFORD UNIVERSITY	NGR 05-020-569	Pound, G. M.	13	1346
ARC	Anliker, J. E.	STANFORD UNIVERSITY	NGR 05-020-575	Lai, D. C.	45	1347
ARC	Feller, D. D.	STANFORD UNIVERSITY	NGR 05-020-578	Degrazia, J. A.	52	1349
ARC	Neville, E. D.	STANFORD UNIVERSITY	NGR 05-020-578	Degrazia, J. A.	52	1349
ARC	Rubesin, M. W.	STANFORD UNIVERSITY	NGR 05-020-583	Kruger, C. H.	41	1351
ARC	Presley, L. L.	STANFORD UNIVERSITY	NGR 05-020-583	Kruger, C. H.	41	1351
ARC	Sandler, H.	STANFORD UNIVERSITY	NGR 05-020-615	Meindl, J. D.	53	1353
ARC	Chapman, D. R.	STANFORD UNIVERSITY	NGR 05-020-622	Reynolds, W. C.	41	1354
ARC	Rubesin, M. W.	STANFORD UNIVERSITY	NGR 05-020-622	Reynolds, W. C.	41	1354
ARC	Sandler, H.	STANFORD UNIVERSITY	NGR 05-020-634	Harrison, D. C.	52	1357
ARC	Lumb, D. R.	STANFORD UNIVERSITY	NGR 05-020-659	Lusignan, B. B.	45	1360
ARC	Williams, D. P.	STANFORD UNIVERSITY	NGR 05-020-662	Barnett, D. M.	47	1361
ARC	Thomas, C. L.	STANFORD UNIVERSITY	NGR 05-020-663	Powell, J. D.	41	1362
ARC	Jones, R. T.	STANFORD UNIVERSITY	NGR 05-020-663	Powell, J. D.	41	1362
ARC	Hickey, D. H.	STANFORD UNIVERSITY	NGR 05-020-676	Karamcheti, K.	13	1364
ARC	Rosenfeld, S. A.	STANFORD UNIVERSITY	NSR 05-020-500	McCarthy, J.	21	1371
ARC	Mason, R. H.	STATE U NY-STONY BRK	NGR 33-015-140	Gebel, W.	11	2860
ARC	Cameron, R. M.	STATE U NY-STONY BRK	NGR 33-015-140	Gebel, W.	11	2860
ARC	Gillespie, C. M.	STATE U NY-STONY BRK	NGR 33-015-166	Gebel, W.	11	2866
ARC	Cameron, R. M.	STATE U NY-STONY BRK	NGR 33-015-166	Gebel, W.	11	2866

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ARC	Arvesen, J. C.	TEXAS A&M UNIVERSITY	NGR 44-001-125	Plass, G. N.	39	3268
ARC	Larson, H. K.	TEXAS A&M UNIVERSITY	NGR 44-001-125	Plass, G. N.	39	3268
ARC	Patton, M.	TEXAS CHRISTIAN UNIV	NGR 44-009-025	Evans, S.	69	3271
ARC	Huff, E.	TEXAS CHRISTIAN UNIV	NGR 44-009-025	Evans, S.	69	3271
ARC	Hewitt, J. E.	TEXAS WOMANS UNIV	NAS 2-6434	Mack, P. B.	59	3280
ARC	Dunlap, W. A.	TEXAS WOMANS UNIV	NAS 2-6434	Mack, P. B.	59	3280
ARC	Patton, R. M.	TRINITY UNIVERSITY	NGR 44-017-004	Thach, J. S.	61	3282
ARC	Daunton, N. G.	TRINITY UNIVERSITY	NGR 44-017-004	Thach, J. S.	61	3282
ARC	Soderman, P. T.	TUFTS UNIVERSITY	NGR 22-012-028	Cole, J.	41	2392
ARC	Harrison, G. A.	TUFTS UNIVERSITY	NGR 22-012-030	Rule, A. H.	59	2393
ARC	Haughney, L. C.	UNIV ALASKA-FAIRBNKS	NGR 02-001-093	Akasofu, S. I.	31	1105
ARC	Haughney, L. C.	UNIV ALASKA-FAIRBNKS	NGR 02-001-099	Sivjee, G. G.	31	1107
ARC	Hall, C. F.	UNIV OF ARIZONA	NAS 2-5604	Gehrels, T.	13	1113
ARC	Hall, C. F.	UNIV OF ARIZONA	NAS 2-6265	Gehrels, T.	11	1114
ARC		UNIV OF ARIZONA	NAS 2-6447		49	1115
ARC	Hall, C. F.	UNIV OF ARIZONA	NAS 2-7476	Baker, L. R.	11	1116
ARC	Cameron, R. M.	UNIV OF ARIZONA	NGR 03-002-258	Kuiper, G. P.	11	1158
ARC	Cameron, R. M.	UNIV OF ARIZONA	NGR 03-002-277	Low, F. J.	11	1163
ARC	Gillespie, C. M., Jr.	UNIV OF ARIZONA	NGR 03-002-331	Johnson, H. L.	11	1165
ARC	Cameron, R. M.	UNIV OF ARIZONA	NGR 03-002-331	Johnson, H. L.	11	1165
ARC	Cameron, R. M.	UNIV OF ARIZONA	NGR 03-002-332	Larson, H. P.	11	1166
ARC	Gillespie, C. M., Jr.	UNIV OF ARIZONA	NGR 03-002-332	Larson, H. P.	11	1166
ARC	Gillespie, C. M., Jr.	UNIV OF ARIZONA	NGR 03-002-333	Johnson, H. L.	11	1167
ARC	Cameron, R. M.	UNIV OF ARIZONA	NGR 03-002-333	Johnson, H. L.	11	1167
ARC	Cameron, R. M.	UNIV OF ARIZONA	NGR 03-002-334	Larson, H. P.	11	1168
ARC	Gillespie, C. M., Jr.	UNIV OF ARIZONA	NGR 03-002-334	Larson, H. P.	11	1168
ARC	Cameron, R. M.	UNIV OF ARIZONA	NGR 03-002-354	Johnson, H. L.	11	1169
ARC	Ragent, B.	UNIV ARKANSAS-FAYETV	NGL 04-001-007	Testerman, M. K.	19	1173
ARC	Iufer, E. J.	UNIV CALIF-BERKELEY	NAS 2-6485	Morrison, H. F.	42	1372
ARC	Kenyon, G. C.	UNIV CALIF-BERKELEY	NAS 2-6717	Horonjeff, R.	41	1373
ARC	Galloway, T. L.	UNIV CALIF-BERKELEY	NAS 2-6717	Horonjeff, R.	41	1373
ARC	Wilbur, A. C.	UNIV CALIF-BERKELEY	NAS 2-7159	Bhattacharyya, B. K.	32	1374
ARC	Iufer, E. J.	UNIV CALIF-BERKELEY	NAS 2-7159	Bhattacharyya, B. K.	32	1374
ARC	Poppoff, I. G.	UNIV CALIF-BERKELEY	NAS 2-7562	Colwell, R. N.	39	1375
ARC	Tremor, J. W.	UNIV CALIF-BERKELEY	NAS 2-7562	Colwell, R. N.	39	1375
ARC	Tremor, J. W.	UNIV CALIF-BERKELEY	NAS 2-7567	Colwell, R. N.	39	1376
ARC	Poppoff, I. G.	UNIV CALIF-BERKELEY	NAS 2-7567	Colwell, R. N.	39	1376
ARC		UNIV CALIF-BERKELEY	NGL 05-003-016	Desoer, C. A.	41	1395
ARC	Stewart, E. C.	UNIV CALIF-BERKELEY	NGL 05-003-016	Desoer, C. A.	41	1395
ARC	Newsom, B. D.	UNIV CALIF-BERKELEY	NGL 05-003-024	Pace, N.	51	1397
ARC	Poppoff, I. G.	UNIV CALIF-BERKELEY	NGL 05-003-404	Colewell, R. N.	39	1403
ARC	Cameron, R. M.	UNIV CALIF-BERKELEY	NGR 05-003-432	Townes, C. H.	11	1417
ARC	Mason, R. H.	UNIV CALIF-BERKELEY	NGR 05-003-432	Townes, C. H.	11	1417
ARC	Peterson, V. L.	UNIV CALIF-BERKELEY	NGR 05-003-451	Talbot, L.	41	1422
ARC	Wydeven, T. J.	UNIV CALIF-BERKELEY	NGR 05-003-462	Bell, A. T.	43	1428
ARC	Newsom, B. D.	UNIV CALIF-BERKELEY	NGR 05-003-470	Pace, N.	59	1429
ARC	Tanner, T. A., Jr.	UNIV CALIF-BERKELEY	NGR 05-003-471	Laporte, T. R.	75	1430
ARC	Nagel, D. C.	UNIV CALIF-BERKELEY	NGR 05-003-471	Laporte, T. R.	75	1430
ARC	Wydeven, T. J.	UNIV CALIF-BERKELEY	NGR 05-003-478	Merrill, R. P.	12	1431
ARC	Cameron, R. M.	UNIV CALIF-BERKELEY	NGR 05-003-511	Townes, C. H.	11	1436
ARC	Gillespie, C. M., Jr.	UNIV CALIF-BERKELEY	NGR 05-003-511	Townes, C. H.	11	1436
ARC	Hansen, C. F.	UNIV CALIF-BERKELEY	NGR 05-003-559	Gustafson, T. K.	13	1440
ARC	Billman, K. W.	UNIV CALIF-BERKELEY	NGR 05-003-559	Gustafson, T. K.	13	1440
ARC	Yaggy, P. F.	UNIV CALIF-DAVIS	NAS 2-5668	Draper, H. A.	41	1443
ARC	Winget, C. M.	UNIV CALIF-DAVIS	NAS 2-5826	Evans, J. S.	51	1444
ARC	Taketa, S. T.	UNIV CALIF-DAVIS	NAS 2-6633	Mazelis, M.	39	1445
ARC	Winget, C. M.	UNIV CALIF-DAVIS	NAS 2-6657	Beljan, J. R.	59	1446
ARC	Oyama, J.	UNIV CALIF-DAVIS	NAS 2-6763	Goldman, M.	53	1447

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ARC	Winget, C. M.	UNIV CALIF-DAVIS	NAS 2-7152	Beljan, J. R.	53	1448
ARC	Vernikos-Danell, J.	UNIV CALIF-DAVIS	NAS 2-7152	Beljan, J. R.	53	1448
ARC	Danellis, J. V.	UNIV CALIF-DAVIS	NAS 2-7342	Sheikhislam, B.	52	1449
ARC	Dolkas, C.	UNIV CALIF-DAVIS	NAS 2-7342	Sheikhislam, B.	52	1449
ARC	Winget, C. W.	UNIV CALIF-DAVIS	NAS 2-7503	Evans, J. W.	59	1450
ARC	Danellis, J. V.	UNIV CALIF-DAVIS	NAS 2-7503	Evans, J. W.	59	1450
ARC	Wrigley, R. C.	UNIV CALIF-DAVIS	NAS 2-7516	Goldman, C. R.	31	1451
ARC	Winget, C. M.	UNIV CALIF-DAVIS	NAS 2-7519	Chapman, L. F.	53	1452
ARC	Danellis, J. V.	UNIV CALIF-DAVIS	NAS 2-7519	Chapman, L. F.	53	1452
ARC	Oyama, J.	UNIV CALIF-DAVIS	NGL 05-004-008	Smith, A. H.	51	1455
ARC	Sandler, H.	UNIV CALIF-DAVIS	NGL 05-004-031	Carlson, L. D.	53	1456
ARC	Corliss, L.	UNIV CALIF-DAVIS	NGR 05-004-051	Hoffman, M. S.	46	1460
ARC	Young, D. R.	UNIV CALIF-DAVIS	NGR 05-004-080	Beljan, J. R.	53	1463
ARC	Mandel, A. D.	UNIV CALIF-IRVINE	NGR 05-041-012	Tilles, J. G.	52	1464
ARC	Tremor, J. W.	UNIV CALIF-L ANGELES	NAS 2-6649	Ebersold, W. T.	51	1466
ARC	Dyal, P.	UNIV CALIF-L ANGELES	NAS 2-6791	Schubert, G.	13	1467
ARC	Hall, C. F.	UNIV CALIF-L ANGELES	NAS 2-7251	Coleman, P. J.	13	1468
ARC	Chang, S.	UNIV CALIF-L ANGELES	NAS 2-7440	Kaplan, I. R.	12	1469
ARC	Kvenvolden, K. A.	UNIV CALIF-L ANGELES	NAS 2-7440	Kaplan, I. R.	12	1469
ARC	Winter, D.	UNIV CALIF-L ANGELES	NGL 05-007-195	French, J. D.	51	1489
ARC	Peterson, V.	UNIV CALIF-L ANGELES	NGR 05-007-323	Cole, J. D.	41	1506
ARC	Gilbreath, W. P.	UNIV CALIF-L ANGELES	NGR 05-007-352	Douglass, D. L.	47	1514
ARC	Gloria, H. R.	UNIV CALIF-RIVERSIDE	NGR 05-008-029	Pitts, J. N.	39	1522
ARC	Reinisch, R. H.	UNIV CALIF-RIVERSIDE	NGR 05-008-029	Pitts, J. N.	39	1522
ARC	Hall, C. F.	UNIV CALIF-SAN DIEGO	NAS 2-5602	Fillius, R. W.	13	1523
ARC	Hall, C. F.	UNIV CALIF-SAN DIEGO	NAS 2-6552	Fillius, R. W.	13	1524
ARC	Smith, M. C.	UNIV CALIF-SAN DIEGO	NAS 2-6916		21	1525
ARC		UNIV CALIF-SAN DIEGO	NGL 05-009-025	Libby, P. A.	41	1541
ARC	Billingham, J.	UNIV CALIF-SAN DIEGO	NGL 05-009-109	West, J. B.	53	1544
ARC	Hoffmann, R.	UNIV CALIF-SAN DIEGO	NGL 05-009-109	West, J. B.	53	1544
ARC	Harmount, T.	UNIV CALIF-SAN DIEGO	NGR 05-009-032	Miller, S. L.	51	1550
ARC	Winter, D. L.	UNIV CALIF-SAN DIEGO	NGR 05-009-083	Galambos, R.	61	1554
ARC	Nachtsheim, P.	UNIV CALIF-SAN DIEGO	NGR 05-009-190	Libby, P. A.	41	1563
ARC	Haines, R. F.	UNIV CALIF-SAN DIEGO	NGR 05-009-192	Harris, J. L.	59	1564
ARC	Billingham, J.	UNIV CALIF-SAN DIEGO	NGR 05-009-192	Harris, J. L.	59	1564
ARC	Anliker, J. E.	UNIV CALIF-SAN DIEGO	NGR 05-009-198	Galambos, R.	59	1566
ARC	Danellis, J. V.	UNIV CALIF-SAN FRAN	NAS 2-6632	Dallman, M.	51	1569
ARC	Danellis, J. V.	UNIV CALIF-SAN FRAN	NAS 2-7326	Dallman, M. F.	52	1570
ARC	Zill, L. P.	UNIV CALIF-SAN FRAN	NGL 05-025-014	Stolckenus, W.	59	1571
ARC	Mandel, A. D.	UNIV CALIF-SAN FRAN	NGR 05-025-008	Maibach, H. I.	52	1573
ARC	Reinesch, R.	UNIV CALIF-S CRUZ	NGL 05-061-004	Evleth, E. M.	12	1580
ARC	Hall, C. F.	UNIV OF CHICAGO	NAS 2-5601	Simpson, J. A.	13	1908
ARC	Hall, C. F.	UNIV OF CHICAGO	NAS 2-6551	Simpson, J. A.	13	1909
ARC		UNIV OF CHICAGO	NGR 14-001-199	Greene, P. H.	21	1940
ARC	Mason, R. H.	UNIV OF CHICAGO	NGR 14-001-211	Harper, D. A.	11	1942
ARC	Daunton, N. G.	UNIV OF CHICAGO	NGR 14-001-225	Fernandez, C.	51	1944
ARC	Cameron, R. M.	UNIV OF CHICAGO	NGR 14-001-227	Harper, D. A.	11	1945
ARC	Gillespie, C. M.	UNIV OF CHICAGO	NGR 14-001-227	Harper, D. A.	11	1945
ARC		UNIV COLORADO-BOLDR	NAS 2-1298		11	1650
ARC	Quattrone, P. D.	UNIV OF DENVER	NGR 06-004-068	Ross, L. W.	43	1684
ARC		UNIV OF DENVER	NGR 06-004-068	Ross, L. W.	43	1684
ARC	Quattrone, P. D.	UNIV OF DENVER	NGR 06-004-125	Ross, L. W.	12	1686
ARC	Anliker, J. E.	UNIV OF FLORIDA	NGR 10-005-057	Webb, W. B.	69	1803
ARC	Taketa, S. T.	UNIV OF HAWAII	NAS 2-6624	Siegal, S. M.	51	1864
ARC	Sandler, H.	UNIV OF HAWAII	NAS 2-6624	Siegal, S. M.	51	1864
ARC	Smith, M.	UNIV OF HAWAII	NAS 2-6700	Litchenberger, W.	99	1865
ARC	Pirtle, M. W.	UNIV OF HAWAII	NAS 2-6700	Litchenberger, W.	99	1865
ARC	Miquel, J.	UNIV OF HOUSTON	NAS 2-7435	Oro, J.	51	3284

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ARC		UNIV ILLINOIS-URBANA	AF306 24144		21	1950
ARC	Tanner, T. A.	UNIV ILLINOIS-URBANA	NGR 14-005-175	Donchin, E.	69	1962
ARC	Leifer, L. J.	UNIV ILLINOIS-URBANA	NGR 14-005-175	Donchin, E.	69	1962
ARC	Quattrone, P. D.	UNIV ILLINOIS-URBANA	NGR 14-005-192	Heath, J. E.	51	1968
ARC	Williams, B. A.	UNIV ILLINOIS-URBANA	NGR 14-005-192	Heath, J. E.	51	1968
ARC	Watson, V. R.	UNIV ILLINOIS-URBANA	NGR 14-005-202	Ray, R. M.	39	1971
ARC	Hall, C. F.	UNIV OF IOWA	NAS 2-5603	Van Allen, J. A.	13	2026
ARC	Schillinger, G.	UNIV OF IOWA	NAS 2-6064	Wunder, C. C.	51	2027
ARC	Tremor, J. W.	UNIV OF IOWA	NAS 2-6064	Wunder, C. C.	51	2027
ARC	Hall, C. F.	UNIV OF IOWA	NAS 2-6553	Van Allen, J. A.	13	2028
ARC	Oyama, J.	UNIV OF IOWA	NGR 16-001-031	Wunder, C. C.	51	2043
ARC	Anliker, J. E.	UNIV OF KENTUCKY	NGR 18-001-068	McCoy, D. F.	61	2078
ARC	Corsiglia, V. R.	UNIV MARYLAND-COL PK	NGR 21-002-266	Plotkin, A.	41	2171
ARC	Centolanzzi, F. J.	UNIV MARYLAND-COL PK	NGR 21-002-335	Yang, J. C.	47	2184
ARC	Larson, H. K.	UNIV MARYLAND-COL PK	NGR 21-002-335	Yang, J. C.	47	2184
ARC	Chyu, W. J.	UNIV MARYLAND-COL PK	NGR 21-002-350	Yang, Y. C.	41	2187
ARC	Gaspers, P. A.	UNIV MARYLAND-COL PK	NGR 21-002-391	Weisshaar, T. A.	41	2194
ARC	Pfyl, F.	UNIV MARYLAND-COL PK	NGR 21-002-391	Weisshaar, T. A.	41	2194
ARC	Arversen, J. C.	UNIV MICH-ANN ARBOR	NAS 2-6015	Anding, D. C.	39	2425
ARC	Schillinger, G.	UNIV MICH-ANN ARBOR	NAS 2-6057	Von Baumgarten A, R. J.	61	2426
ARC	Tremor, J. W.	UNIV MICH-ANN ARBOR	NAS 2-6057	Von Baumgarten A, R. J.	61	2426
ARC	Shillinger, G. L.	UNIV MICH-ANN ARBOR	NGR 23-005-201	Von Baumgarten A, R.	61	2457
ARC	Vernikos-Danell, J.	UNIV MICH-ANN ARBOR	NGR 23-005-487	Valenstein, E. S.	69	2466
ARC	Goodwin, A. L.	UNIV MICH-ANN ARBOR	NGR 23-005-487	Valenstein, E. S.	69	2466
ARC	Winget, C. M.	U MINN-MNPLS-ST PAUL	NGR 24-005-006	Halberg, F.	61	2512
ARC	Cameron, R. M.	U MINN-MNPLS-ST PAUL	NGR 24-005-267	Ney, E. P.	11	2522
ARC	Gillespie, C. M., Jr.	U MINN-MNPLS-ST PAUL	NGR 24-005-267	Ney, E. P.	11	2522
ARC	Bader, M.	U MINN-MNPLS-ST PAUL	NSR 24-005-238	Ney, E. P.	11	2526
ARC	Cameron, R. M.	U MINN-MNPLS-ST PAUL	NSR 24-005-238	Ney, E. P.	11	2526
ARC	Chambers, A. B.	UNIV MO-COLUMBIA	NGR 26-004-095	Miles, J. B.	49	2560
ARC	Blackaby, J. R.	UNIV MO-COLUMBIA	NGR 26-004-095	Miles, J. B.	49	2560
ARC	Sandler, H.	UNIV MO-COLUMBIA	NGR 26-004-099	Hahn, A. W.	52	2562
ARC	Kvenvolden, K. A.	UNIV MO-COLUMBIA	NGR 26-004-100	Gehrke, C. W.	59	2563
ARC	Pollock, G. E.	UNIV MO-COLUMBIA	NGR 26-004-100	Gehrke, C. W.	59	2563
ARC	Coe, C. F.	UNIV MO-ROLLA	NGR 26-003-026	Rechtien, R. D.	49	2569
ARC	Chambers, A. B.	UNIV MO-ROLLA	NGR 26-004-097	Miles, J. B.	46	2572
ARC	Quattrone, P. D.	UNIV MO-ROLLA	NGR 26-004-097	Miles, J. B.	46	2572
ARC		UNIV N CAR-CHPL HILL	NGL 34-003-041	Clark, F. C.	13	2921
ARC	Feller, D. D.	UNIV OF NOTTINGHAM	NAS 2-5157	Weinbren, K.	51	3619
ARC	Cameron, R. M.	UNIV OREGON-EUGENE	NGR 38-003-034	Donnelly, R. J.	31	3029
ARC	Gillespie, C. M.	UNIV OREGON-EUGENE	NGR 38-003-034	Donnelly, R. J.	31	3029
ARC	Gillespie, C. M.	UNIV OREGON-EUGENE	NGR 38-003-035	Donnelly, R. J.	11	3030
ARC	Cameron, R. M.	UNIV OREGON-EUGENE	NGR 38-003-035	Donnelly, R. J.	11	3030
ARC	Whiting, E. E.	UNIV OREGON-EUGENE	NGR 38-003-036	Crasemann, B.	13	3031
ARC	Arnold, J. O.	UNIV OREGON-EUGENE	NGR 38-003-036	Crasemann, B.	13	3031
ARC	Zill, L. P.	UNIV OF PENNSYLVANIA	NAS 2-2432	Brown, A. H.	51	3099
ARC	Cameron, R. M.	UNIV OF ROCHESTER	NGR 33-019-127	Pipher, J. L.	11	2883
ARC	Gillespie, C. M., Jr.	UNIV OF ROCHESTER	NGR 33-019-127	Pipher, J. L.	11	2883
ARC	Tremor, J. W.	UNIV SAN FRANCISCO	NAS 2-7059	Benton, E. V.	19	1584
ARC	Doolin, B. F.	UNIV OF SANTA CLARA	NGR 05-017-010	Siljak, D. D.	49	1588
ARC	Meyer, G.	UNIV OF SANTA CLARA	NGR 05-017-010	Siljak, D. D.	49	1588
ARC	Stine, H.	UNIV OF SANTA CLARA	NGR 05-017-019	Cheng, D. Y.	46	1589
ARC	Chisel, D.	UNIV OF SANTA CLARA	NGR 05-017-023	Ian, M. R.	46	1590
ARC	Poppoff, L.	UNIV OF SANTA CLARA	NGR 05-017-027	Barker, W. A.	11	1591
ARC	Sandler, H.	UNIV OF SANTA CLARA	NGR 05-017-028	Mancini, R. E.	53	1592
ARC	Marvin, J. G.	UNIV OF SANTA CLARA	NGR 05-017-029	Owen, F. K.	41	1593
ARC	Hruly, R.	UNIV OF SANTA CLARA	NGR 05-017-031	Dunn, W. R.	41	1594
ARC	Pfyl, F. A.	UNIV OF SANTA CLARA	NGR 05-017-033	Cheng, D. Y.	41	1595

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ARC	Schwartz, I. R.	UNIV OF SANTA CLARA	NGR 05-017-033	Cheng, D. Y.	41	1595
ARC	Sandler, H.	UNIV OF SANTA CLARA	NGR 05-017-034	Mancini, R. E.	53	1596
ARC	Hall, C. F.	UNIV OF SOUTHERN CAL	NAS 2-5608	Judge, D. L.	13	1598
ARC	Hall, C. F.	UNIV OF SOUTHERN CAL	NAS 2-6558	Judge, D. L.	13	1599
ARC	Dods, J. B., Jr.	UNIV TEXAS-AUSTIN	NGR 44-012-221	Panton, R. L.	41	3346
ARC	Mason, R. H.	UNIV TEXAS-AUSTIN	NGR 44-012-240	Ulrich, B. T.	11	3349
ARC	Cameron, R. M.	UNIV TEXAS-AUSTIN	NGR 44-012-240	Ulrich, B. T.	11	3349
ARC	Sandler, H.	UNIV TEXAS-GALVESTON	NGR 44-088-002	Stone, H. L.	52	3393
ARC		U TEX HEALTH CTR-DAL	NAS 2-3082		51	3394
ARC	Tremor, J. W.	U TEX HEALTH CTR-DAL	NGR 44-012-003	Montgomery, P. O., Jr.	51	3395
ARC	Howe, J. T.	UNIV OF TULSA	NGR 37-008-003	Weston, K. C.	47	3010
ARC	Nachtsheim, P. R.	UNIV OF TULSA	NGR 37-008-003	Weston, K. C.	47	3010
ARC	Oyama, J.	UNIV OF VIRGINIA	NAS 2-1554	Pitts, G. C.	51	3467
ARC	Mahler, W. R.	UNIV OF VIRGINIA	NGR 47-005-186	Ebbeson, S. O.	59	3484
ARC	Goldstein, H. E.	UNIV OF WASHINGTON	NAS 2-6541	Mueller, J. I.	47	3528
ARC	Larson, H. K.	UNIV OF WASHINGTON	NAS 2-6541	Mueller, J. I.	47	3528
ARC		UNIV OF WASHINGTON	NAS 2-6778		39	3529
ARC	Hansen, C. F.	UNIV OF WASHINGTON	NGL 48-002-044	Hertzberg, A.	13	3534
ARC	Watson, E. C.	UNIV OF WASHINGTON	NGL 48-002-047	Childs, M. F.	13	3535
ARC	Kurkowski, R. L.	UNIV OF WASHINGTON	NGR 48-002-085	Joppa, R. G.	41	3539
ARC	Treon, S.	UNIV OF WASHINGTON	NGR 48-002-107	Russell, D. A.	41	3540
ARC	Jones, L.	UNIV OF WASHINGTON	NGR 48-002-107	Russell, D. A.	41	3540
ARC	Sandler, H.	UNIV OF WASHINGTON	NGR 48-002-131	Scher, A. M.	52	3544
ARC	Reynolds, R. T.	UNIV OF WASHINGTON	NGR 48-002-139	Leovy, C. B.	11	3546
ARC	Anderson, A. E.	UNIV OF WASHINGTON	NGR 48-002-141	Kippenhan, C. J.	41	3547
ARC	Watson, E. C.	UNIV OF WASHINGTON	NGR 48-002-141	Kippenhan, C. J.	41	3547
ARC	Atencio, A.	UNIV OF WASHINGTON	NGR 48-002-144	Chalupnik, J. D.	41	3549
ARC	Hodder, B. K.	UNIV OF WASHINGTON	NGR 48-002-144	Chalupnik, J. D.	41	3549
ARC	Pollack, J. B.	UNIV OF WASHINGTON	NGR 48-002-161	Leovy, C. B.	31	3552
ARC	Reynolds, R. T.	UNIV OF WASHINGTON	NGR 48-002-161	Leovy, C. B.	31	3552
ARC	Mihalov, J. D.	UNIV WISC-MADISON	NAS 2-6759	Scherb, F.	19	3562
ARC	Wolfe, J. H.	UNIV WISC-MADISON	NAS 2-6759	Scherb, F.	19	3562
ARC	Taketa, S. T.	UNIV WISC-MADISON	NAS 2-7314	Tibbetts, T. W.	49	3563
ARC	Mandel, A. D.	UNIV WISC-MADISON	NGL 50-002-078	Dick, E. C.	51	3580
ARC	Young, D. R.	UNIV WISC-MADISON	NGR 50-002-051	Cameron, J. R.	52	3584
ARC	Rosenfeld, S. A.	UNIV WISC-MADISON	NGR 50-002-160	Parmentier, R. D.	21	3588
ARC	Mandel, A. D.	UNIV WISC-MADISON	NGR 50-002-174	Dick, E. C.	52	3592
ARC	Young, D. R.	UNIV WISC-MADISON	NGR 50-002-183	Mazess, R. B.	52	3593
ARC	Mandel, A. D.	UNIV WISC-MADISON	NGR 50-002-191	Balish, E.	52	3595
ARC	Sandler, H.	UNIV WISC-MADISON	NGR 50-002-204	Weber, J. C.	45	3597
ARC	Rositano, S.	UNIV WISC-MADISON	NGR 50-002-204	Weber, J. C.	45	3597
ARC	Cameron, R. M.	UNIV OF WYOMING	NGR 51-001-036	Hackwell, J. A.	31	3609
ARC	Mason, R. H.	UNIV OF WYOMING	NGR 51-001-036	Hackwell, J. A.	31	3609
ARC	Mehler, W. R.	UPPSALA UNIVERSITY	NGR 52-028-004	Engstrom, H.	59	3628
ARC	Winter, D.	UPPSALA UNIVERSITY	NGR 52-028-004	Engstrom, H.	59	3628
ARC	Meyer, G.	UTAH STATE UNIV	NGR 45-002-016	Gunderson, R. W.	49	3426
ARC	Doolin, B. F.	UTAH STATE UNIV	NGR 45-002-016	Gunderson, R. W.	49	3426
ARC	Ormiston, R. A.	WASHINGTON UNIVERSTY	NAS 2-4151	Hohennemser, K. H.	41	2573
ARC	Peters, D. A.	WASHINGTON UNIVERSTY	NAS 2-4151	Hohennemser, K. H.	41	2573
ARC	Danellis, J. V.	WEST VIRGINIA UNIV	NGL 49-001-019	Moran, W. H.	52	3555
ARC	Pollack, J. B.	WEST VIRGINIA UNIV	NGR 49-001-048	Leovy, C. B.	52	3556
ARC	Reynolds, R. T.	WEST VIRGINIA UNIV	NGR 49-001-048	Leovy, C. B.	52	3556
ARC	Wydeven, T.	WORCESTER POLY INST	NGL 22-017-006	Zwiebel, I.	59	2408
ARC	Shapira, J.	WORCESTER POLY INST	NGR 22-017-023	Weiss, A.	12	2409
ARC	Shapira, J.	WORCESTER POLY INST	NGR 22-017-024	Weiss, A. H.	43	2410
ARC	Quattrone, P. D.	WORCESTER POLY INST	NGR 22-017-024	Weiss, A. H.	43	2410
ARC	Vernikosdanelli, J.	XAVIER UNIV-LA	NGR 19-007-004	Ashman, P. U.	59	2120
ARC	Winget, C. M.	XAVIER UNIV-LA	NGR 19-007-004	Ashman, P. U.	59	2120

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
ARC	Billman, K. W.	YALE UNIVERSITY	NGR 07-004-035	Lamb, W. E.	13	1714
ARC	Mandel, A. D.	YALE UNIVERSITY	NGR 07-004-146	Evans, A. S.	52	1719
FRC	Szalai, K. J.	MASS INST OF TECH	NGL 22-009-548	Whitaker, H. P.	41	2328
FRC	Deets, D. A.	MASS INST OF TECH	NGL 22-009-548	Whitaker, H. P.	41	2328
FRC	Kordes, E. E.	STANFORD UNIVERSITY	NGL 05-020-498	McIntosh, S. C., Jr.	41	1319
FRC	Ehernberger, L. J.	TEXAS A&M UNIVERSITY	NGR 44-001-081	Scoggins, J. R.	31	3264
FRC	Rediess, H. A.	UNIV CALIF-L ANGELES	NGL 05-007-379	Balakrishnan, A. V.	41	1494
FRC	Rediess, H. A.	UNIV CALIF-L ANGELES	NGR 05-007-122	Balakrishnan, A. V.	41	1496
FRC	Loschke, P. C.	UNIV OF KANSAS	NGR 17-002-095	Roskam, J.	41	2065
FRC	Wolf, T. D.	UNIV OF VIRGINIA	NGR 47-005-202	Jacobson, I. D.	51	3485
GSFC	Fihelly, A. W.	AMERICAN UNIVERSITY	NAS 5-21892	MacLeod, N. H.	39	1731
GSFC	Danchenko, V.	BOSTON COLLEGE	NGR 22-003-019	Fang, P.	13	2204
GSFC	Schaefer, D. H.	BOSTON COLLEGE	NGR 22-003-019	Fang, P.	13	2204
GSFC		BOWIE STATE COLLEGE	NAS 5-21418		21	2122
GSFC	Bremer, H. O.	BOWIE STATE COLLEGE	NAS 5-22066	Bannister, P. J.	21	2123
GSFC	McDonald, F. B.	BOWIE STATE COLLEGE	NGR 21-027-001	Thornabene, H. S.	11	2124
GSFC	Boldt, E. A.	BOWIE STATE COLLEGE	NGR 21-027-001	Thornabene, H. S.	11	2124
GSFC	Velez, C. E.	BOWIE STATE COLLEGE	NGR 21-027-004	Srivastava, S.	21	2125
GSFC	Caruso, A. J.	BOWIE STATE COLLEGE	NGR 21-027-010	Bhatia, M. S.	13	2126
GSFC	Coates, R. J.	BROWN UNIVERSITY	NGL 40-002-042	Heller, G. S.	13	3123
GSFC	Meese, K. J.	CALIF INST OF TECH	NAS 5-9312	Stone, E. C.	13	1181
GSFC	Davis, M. A.	CALIF INST OF TECH	NAS 5-11066	Stone, D. C.	13	1182
GSFC	Velez, C. E.	CAL STATE U-FULLERTN	NGR 05-071-005	Pierce, S.	21	1242
GSFC		CAL STATE U-S DIEGO	NAS 5-23249		31	1250
GSFC	Paddack, S. J.	CARNEGIE-MELLON UNIV	NGR 39-087-001	Renard, M. L.	42	3036
GSFC	Paddack, S. J.	CARNEGIE-MELLON UNIV	NGR 39-087-026	Renard, M. L.	42	3039
GSFC	Schaefer, D. H.	CARNEGIE-MELLON UNIV	NGR 39-087-036	Lee, S. H.	45	3040
GSFC	Strong, J. P., III	CARNEGIE-MELLON UNIV	NGR 39-087-036	Lee, S. H.	45	3040
GSFC	Shulman, A. R.	CARNEGIE-MELLON UNIV	NGR 39-087-037	Lee, S. R.	13	3041
GSFC	Ludwig, G.	CASE WESTERN RESERVE	NGL 36-027-001	Glaser, E. L.	99	2932
GSFC	O'Keefe, J. A.	CASE WESTERN RESERVE	NGR 36-003-100	Cooper, A. R.	13	2935
GSFC	Schutt, J. B.	CATHOLIC UNIVERSITY	NGR 09-005-072	Tomoyasu, T.	13	1738
GSFC	Schach, M.	CATHOLIC UNIVERSITY	NGR 09-005-072	Tomoyasu, T.	13	1738
GSFC	Kniffen, D. A.	CATHOLIC UNIVERSITY	NGR 09-005-077	Crannel, H.	13	1740
GSFC	Fichtel, C. E.	CATHOLIC UNIVERSITY	NGR 09-005-077	Crannel, H.	13	1740
GSFC	Stothers, R. B.	CITY COLLEGE OF N Y	NGL 33-013-040	Lea, R. M.	11	2713
GSFC	Thaddeus, P.	CITY COLLEGE OF N Y	NGL 33-013-040	Lea, R. M.	11	2713
GSFC	Poland, W. B., Jr.	CLEMSON UNIV-CLEMSON	NGR 41-001-036	Helgert, H. J.	19	3139
GSFC	Lynch, T. J.	CLEMSON UNIV-CLEMSON	NGR 41-001-036	Helgert, H. J.	19	3139
GSFC	Paul, F. W.	COL OF HOLY CROSS	NGR 22-091-002	Gunter, R. C.	13	2216
GSFC	Stonesifer, G. R.	COLORADO SCH OF MINE	NAS 5-21778	Reeves, R. G.	32	1620
GSFC	Solomonson, V. V.	COLORADO STATE UNIV	NGR 06-002-098	Reiter, E. R.	31	1640
GSFC	Wexler, R.	COLORADO STATE UNIV	NGR 06-002-102	Vonder Haar, T. H.	31	1641
GSFC	McLean, J. T.	COLUMBIA UNION COL	NGR 21-023-001	Mohr, E. I.	13	2128
GSFC	Donley, J. L.	COLUMBIA UNIVERSITY	NAS 5-11362	Novick, R.	11	2717
GSFC	Burrowbridge, D. R.	COLUMBIA UNIVERSITY	NAS 5-11362	Novick, R.	11	2717
GSFC	Thaddeus, P.	COLUMBIA UNIVERSITY	NAS 5-21394		99	2718
GSFC	Levine, A. L.	COLUMBIA UNIVERSITY	NAS 5-21394		99	2718
GSFC	Levine, A. L.	COLUMBIA UNIVERSITY	NAS 5-22042	Burlingame, A.	99	2719
GSFC	Thaddeus, P.	COLUMBIA UNIVERSITY	NAS 5-22042	Burlingame, A.	99	2719
GSFC	Thaddeus, P.	COLUMBIA UNIVERSITY	NGL 33-008-012	Woltjer, L.	19	2729
GSFC	Thaddeus, P.	COLUMBIA UNIVERSITY	NGL 33-008-182	Foley, H. M.	99	2732
GSFC	Piper, G.	COLUMBIA UNIVERSITY	NGL 33-008-182	Foley, H. M.	99	2732
GSFC	Smith, D. E.	COLUMBIA UNIVERSITY	NGR 33-008-146	Sykes, L. R.	19	2736
GSFC	Szajna, E. J.	CORNELL UNIVERSITY	NAS 5-21781	Dethier, B. E.	39	2746
GSFC	Szajna, E. F.	CORNELL UNIVERSITY	NAS 5-21844	McNair, A. J.	59	2747
GSFC	Szajna, E. W.	CORNELL UNIVERSITY	NAS 5-21886	Hardy, E. E.	32	2748
GSFC	Conrath, B. J.	CORNELL UNIVERSITY	NAS 5-23236	Gierasch, P. J.	31	2749

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
GSFC	Hughes, W. E.	CORNELL UNIVERSITY	NGL 33-010-047	McIsaac, P. R.	45	2757
GSFC	Degnan, J. J.	CORNELL UNIVERSITY	NGR 33-010-051	Tang, C. L.	13	2764
GSFC	Hrastar, J. A.	CORNELL UNIVERSITY	NGR 33-010-169	Alfriend, K. T.	49	2775
GSFC	Meese, K. J.	DARTMOUTH COLLEGE	NAS 5-9305	Laaspere, T.	13	2601
GSFC	Szajna, E. F.	DARTMOUTH COLLEGE	NAS 5-21749	Simpson, R. B.	39	2602
GSFC	Predmore, R. E.	DELAWARE STATE COL	NGR 08-002-001	Helmy, E. M.	13	1721
GSFC	Picciolo, G. L.	DELAWARE STATE COL	NGR 08-002-003	Bush, V. N.	51	1722
GSFC	Aikin, A. C.	DELAWARE STATE COL	NGR 08-002-005	Helmy, E. M.	13	1723
GSFC	Pascuitti, E. R.	DUKE UNIVERSITY	NGL 34-001-001	Wilson, T. G.	45	2887
GSFC	Rodriguez, G. E.	DUKE UNIVERSITY	NGL 34-001-001	Wilson, T. G.	45	2887
GSFC	Trombka, I. J.	DUKE UNIVERSITY	NGR 34-001-041	O'Foghluha, F.	13	2888
GSFC	Heath, D. F.	FAIRFIELD UNIVERSITY	NGR 07-010-002	McElaney, J. H.	31	1690
GSFC	McDonald, F. B.	FEDERAL CITY COLLEGE	NGR 09-050-001	Whiteside, H.	11	1744
GSFC	Ormes, J. F.	FEDERAL CITY COLLEGE	NGR 09-050-001	Whiteside, H.	11	1744
GSFC	Hennigan, T. J.	FEDERAL CITY COLLEGE	NGR 09-050-003	Nottingham, W. C.	12	1745
GSFC	Halpert, G.	FEDERAL CITY COLLEGE	NGR 09-050-003	Nottingham, W. C.	12	1745
GSFC	Mundy, J. R.	FEDERAL CITY COLLEGE	NGR 09-050-007	Ng, G.	12	1746
GSFC	Alterescu, S.	FEDERAL CITY COLLEGE	NGR 09-050-013	Schwarz, R. A.	21	1748
GSFC	Friedman, D. S.	FEDERAL CITY COLLEGE	NGR 09-050-013	Schwarz, R. A.	21	1748
GSFC		GEORGE WASHINGTON U	NAS 5-11191		13	1749
GSFC	McAvoy, N.	GEORGE WASHINGTON U	NGL 09-010-008	Filipeseu, N.	12	1752
GSFC	Plotkin, H. H.	GEORGE WASHINGTON U	NGL 09-010-008	Filipeseu, N.	12	1752
GSFC	Moore, J. V.	GEORGE WASHINGTON U	NGR 09-010-090	Kahn, W. K.	49	1761
GSFC	Staff, W. O.	HARVARD UNIVERSITY	NAS 5-9274	Goldberg, L.	13	2219
GSFC		HARVARD UNIVERSITY	NAS 5-23199		31	2220
GSFC	Plotkin, H. H.	HARVARD UNIVERSITY	NGL 22-007-117	Bloembergen, N.	13	2227
GSFC	Okeefe, J. A.	HOWARD UNIVERSITY	NGL 09-011-006	Thorpe, A. N.	13	1767
GSFC	Mentall, J. E.	HOWARD UNIVERSITY	NGR 09-011-004	Thorpe, A. N.	13	1770
GSFC	Trombka, J. I.	HOWARD UNIVERSITY	NGR 09-011-022	Ferguson, G. A.	19	1771
GSFC	Schmadeback, R.	HOWARD UNIVERSITY	NGR 09-011-022	Ferguson, G. A.	19	1771
GSFC	Fedor, J. V.	HOWARD UNIVERSITY	NGR 09-011-039	Bainum, P. M.	41	1772
GSFC	Jackson, W. M.	HOWARD UNIVERSITY	NGR 09-011-052	Kumar, C. K.	11	1773
GSFC	Donn, B.	HOWARD UNIVERSITY	NGR 09-011-052	Kumar, C. K.	11	1773
GSFC		INDIANA U-BLOOMINGTN	NAS 5-21795		32	1974
GSFC	Findlay, J. A.	JOHNS HOPKINS UNIV	NAS 5-11415	Doering, J. P.	31	2129
GSFC	Grimes, D. W.	JOHNS HOPKINS UNIV	NAS 5-11415	Doering, J. P.	31	2129
GSFC	Friedman, D. S.	JOHNS HOPKINS UNIV	NAS 5-22071	Rubin, R. J.	53	2130
GSFC	Gross, F. C.	JOHNS HOPKINS UNIV	NAS 5-22071	Rubin, R. J.	53	2130
GSFC	Major, F. G.	LAVAL UNIVERSITY	NGR 52-133-001	Vanier, J.	45	3613
GSFC	Peters, H. E.	LAVAL UNIVERSITY	NGR 52-133-001	Vanier, J.	45	3613
GSFC	Szajna, E. J.	LONG ISLAND UNIV	NAS 5-21792	Yost, E.	33	2797
GSFC	Szajna, E. F.	LONG ISLAND UNIV	NAS 5-21793	Yost, E.	32	2798
GSFC	Hogan, J. S.	LONG ISLAND UNIV	NGR 33-151-006	Yost, E.	32	2799
GSFC	Hansen, J.	LONG ISLAND UNIV	NGR 33-151-006	Yost, E.	32	2799
GSFC	Ormes, J. F.	LA STATE U-BAT ROUGE	NAS 5-11426	Huggett, R. W.	11	2088
GSFC	Browning, R. K.	LA STATE U-BAT ROUGE	NAS 5-11426	Huggett, R. W.	11	2088
GSFC	Browning, R. K.	LA STATE U-BAT ROUGE	NAS 5-23174	Huggett, R. W.	11	2089
GSFC	Janniche, P. A.	LA STATE U-BAT ROUGE	NAS 5-23174	Huggett, R. W.	11	2089
GSFC	Kull, F. J.	MASS INST OF TECH	NAS 5-11002	Marshall, R. E.	11	2261
GSFC	Davis, M. A.	MASS INST OF TECH	NAS 5-11062	Bridge, H. S.	13	2262
GSFC		MASS INST OF TECH	NAS 5-11082		31	2263
GSFC	Wrublik, D. P.	MASS INST OF TECH	NAS 5-11450	Clark, G. W.	11	2264
GSFC	Townsend, M. R.	MASS INST OF TECH	NAS 5-11450	Clark, G. W.	11	2264
GSFC	Bonavito, N. L.	MASS INST OF TECH	NAS 5-11909	Venti, J.	19	2265
GSFC	Salzberg, I. M.	MASS INST OF TECH	NAS 5-11947	Counselman, C. C., III	19	2266
GSFC	Zufall, S. Z.	MASS INST OF TECH	NAS 5-11947	Counselman, C. C., III	19	2266
GSFC	Duck, K. I.	MASS INST OF TECH	NAS 5-21791	Edelbaum, T. E.	42	2267
GSFC	Flaherty, J. B.	MASS INST OF TECH	NAS 5-21917	Ogletree, E. G.	45	2268

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GSFC	Barbieri, R. W.	MASS INST OF TECH	NGR 22-009-207	Markey, W. R.	42	2335
GSFC	Lefferts, E. J.	MASS INST OF TECH	NGR 22-009-207	Markey, W. R.	42	2335
GSFC	Wilheit, T. T.	MASS INST OF TECH	NGR 22-009-421	Barrett, A. H.	31	2343
GSFC	Jastrow, R.	MASS INST OF TECH	NGR 22-009-727	Lorenz, E.	31	2369
GSFC	Halem, M.	MASS INST OF TECH	NGR 22-009-727	Lorenz, E.	31	2369
GSFC	Ashworth, C. D.	MASS INST OF TECH	NGR 22-009-785	Clark, G. W.	13	2375
GSFC	Szajna, E. J.	MICHIGAN STATE UNIV	NAS 5-21834	Anderson, A.	39	2413
GSFC	Stonesifer, G. R.	MISSISSIPPI STATE U	NAS 5-21817	Ingels, F. M.	32	2530
GSFC	Stonesifer, G. R.	MISSISSIPPI STATE U	NAS 5-21881	Bouchillon, C. W.	39	2531
GSFC	Mundy, J. R.	MORGAN STATE COLLEGE	NGT 21-025-006	Proctor, N. K.	19	2144
GSFC	McKeehan, H. B.	NAT POLYTECHNIC INST	NAS 5-21224	Orellana, J. R.	49	3617
GSFC		NEW MEX ST U-LAS CR	NAS 5-9558		42	2683
GSFC	Flowers, J.	NEW MEX ST U-LAS CR	NAS 5-21432	Snow, L. L.	45	2684
GSFC	Oosterhout, J. D.	NEW MEX ST U-LAS CR	NAS 5-21433	Chavez, R.	11	2685
GSFC	Lantz, P. A.	NEW MEX ST U-LAS CR	NAS 5-22203	Sayles, A., Jr.	49	2686
GSFC	Oosterhout, J.	NEW MEX ST U-LAS CR	NAS 5-22219	Sayles, A., Jr.	49	2687
GSFC	Bissell, E. E.	NEW MEX ST U-LAS CR	NAS 5-23001	Lawrence, R. H.	19	2688
GSFC	Conrad, R. W.	NEW MEX ST U-LAS CR	NAS 5-23001	Lawrence, R. H.	19	2688
GSFC	Mangus, J. D.	NEW YORK INST TECH	NGR 33-230-001	Stroke, G. W.	19	2801
GSFC	Ostrow, H.	NEW YORK UNIVERSITY	NAS 5-21666	Schotland, R. M.	31	2806
GSFC	Halem, M.	NEW YORK UNIVERSITY	NGL 33-016-013	Schaeffer, O. A.	31	2809
GSFC	Hansen, J. E.	NEW YORK UNIVERSITY	NGL 33-016-013	Schaeffer, O. A.	31	2809
GSFC	Holan, J. S.	NEW YORK UNIVERSITY	NGR 33-016-174	Spar, J.	31	2815
GSFC	Halem, M.	NEW YORK UNIVERSITY	NGR 33-016-174	Spar, J.	31	2815
GSFC	Temkin, A.	NO CAR A&T STATE U	NGR 34-012-003	Madan, R. N.	45	2891
GSFC	Ensor, G. J.	NO CAROLINA STATE U	NAS 5-21732	Welby, C. W.	32	2896
GSFC	Johnson, C.	NORTHEASTERN UNIV	NGL 22-011-025	Weiss, K.	13	2382
GSFC		NORTHEASTERN UNIV	NSG 310	Kaula, W. M.	11	2389
GSFC	Fitzpatrick, J. F.	NORTHWESTERN UNIV	NGL 14-007-058	Radnor, M.	79	1893
GSFC	Stone, R. G.	NORTHWESTERN UNIV	NGR 14-007-071	Mintzer, D.	11	1898
GSFC	Hirschmann, E.	OHIO STATE UNIV	NGR 36-008-080	Ksienski, A. A.	45	2970
GSFC	Smith, D. E.	OHIO STATE UNIV	NGR 36-008-161	Rapp, R. H.	19	2972
GSFC	Carpenter, L. H.	OHIO STATE UNIV	NGR 36-008-161	Rapp, R. H.	19	2972
GSFC	Fihelly, A. W.	OLD DOMINION UNIV	NAS 5-21816	Marshall, H. G.	33	3446
GSFC	Crump, E. W.	OREGON STATE UNIV	NAS 5-21831	Smionson, G. H.	39	3012
GSFC	Ragland, T. M.	OREGON STATE UNIV	NAS 5-21831	Smionson, G. H.	39	3012
GSFC	Szajna, E. F.	PENNSYLVANIA STATE U	NAS 5-23133	McMurtry, G. J.	39	3066
GSFC	Brown, J. P.	POLY INST BROOKLYN	NGL 33-006-020	Pickholtz, R. L.	45	2823
GSFC	Rasool, S. I.	POLY INST BROOKLYN	NGR 33-006-062	Gross, S. H.	11	2825
GSFC	Hogan, J. S.	POLY INST BROOKLYN	NGR 33-006-062	Gross, S. H.	11	2825
GSFC	Kupperian, J. E.	PRINCETON UNIVERSITY	NAS 5-1810	Spitzer, L., Jr.	11	2630
GSFC		PRINCETON UNIVERSITY	NAS 5-23254		45	2631
GSFC	Barbieri, R. W.	PRINCETON UNIVERSITY	NGR 31-001-152	Lion, P. M.	42	2651
GSFC	Greene, E. P.	PRINCETON UNIVERSITY	NGR 31-001-170	Coffman, E. G.	19	2652
GSFC	Bogges, A., III	PRINCETON UNIVERSITY	NSR 31-001-286	Lowrance, J.	11	2674
GSFC	Fihelly, A. W.	PURDUE UNIVERSITY	NAS 5-21773	McDonald, R. B.	39	1985
GSFC	Fihelly, A. W.	PURDUE UNIVERSITY	NAS 5-21785	Baumgardner, M. F.	19	1986
GSFC	Fihelly, A. W.	PURDUE UNIVERSITY	NAS 5-21880	Hoffer, R. M.	99	1987
GSFC	Lynch, T. J.	PURDUE UNIVERSITY	NGR 15-005-106	Wintz, P. A.	45	2000
GSFC	Alford, W. L.	PURDUE UNIVERSITY	NGR 15-005-152	Wintz, P. A.	45	2004
GSFC	Donn, B.	RENSSELAER POLY-NY	NGL 33-018-017	Hudson, J. B.	11	2834
GSFC	Meese, K. J.	RICE UNIVERSITY	NAS 5-9317	Anderson, H.	32	3212
GSFC	Thole, J. M.	RUTGERS U-N BRUNSWK	NAS 5-9276	Rouy, A. L.	11	2676
GSFC	Donley, J. D.	RUTGERS U-N BRUNSWK	NAS 5-9276	Rouy, A. L.	11	2676
GSFC	Stonesifer, G. R.	SO DAKOTA STATE UNIV	NAS 5-21774	Meyers, V. I.	39	3149
GSFC	Kutz, R. L.	SOUTHEASTN MASS UNIV	NGR 22-031-002	Chen, C. H.	45	2390
GSFC	Rochelle, R. W.	SOUTHEASTN MASS UNIV	NGR 22-031-002	Chen, C. H.	45	2390
GSFC	Brown, J. P.	SOUTHERN METHODIST U	NGR 44-007-037	Gupta, S. C.	45	3236

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GSFC	Meese, K. J.	STANFORD UNIVERSITY	NAS 5-9309	Helliwell, R. A.	13	1280
GSFC	Baker, J.	STANFORD UNIVERSITY	NAS 5-10102	Villard, O. G.	45	1281
GSFC	Stone, R. G.	STANFORD UNIVERSITY	NAS 5-11387	Peterson, A. M.	11	1282
GSFC	Lidston, J. M.	STANFORD UNIVERSITY	NAS 5-21684	Breakwell, J. V.	42	1283
GSFC	Kant, S.	STANFORD UNIVERSITY	NAS 5-21684	Breakwell, J. V.	42	1283
GSFC	Lefferts, E. J.	STANFORD UNIVERSITY	NAS 5-21714	Breakwell, J. V.	42	1284
GSFC	Farquhar, R. W.	STANFORD UNIVERSITY	NAS 5-21714	Breakwell, J. V.	42	1284
GSFC	Hovis, W. A.	STANFORD UNIVERSITY	NAS 5-21733	Lyon, R. J.	32	1285
GSFC	Crump, E. W.	STANFORD UNIVERSITY	NAS 5-21775	Rich, E. I.	32	1286
GSFC	Crump, E. W.	STANFORD UNIVERSITY	NAS 5-21884	Lyon, R. P.	32	1287
GSFC	Wrublik, K. P.	STANFORD UNIVERSITY	NAS 5-23117	Hofstadter, R.	11	1288
GSFC	Stone, R. G.	STANFORD UNIVERSITY	NAS 5-23205	Peterson, A. M.	13	1289
GSFC	Hughes, W. E.	STANFORD UNIVERSITY	NGL 05-020-165	King, G.	19	1305
GSFC	Farquhar, R. W.	STANFORD UNIVERSITY	NGR 05-020-507	Breakwell, J. V.	42	1335
GSFC	Barbieri, R. W.	STANFORD UNIVERSITY	NGR 05-020-592	Breakwell, J. V.	42	1352
GSFC	Hughes, W. E.	STATE U NY-STONY BRK	NGL 33-015-066	Tuan, H. S.	19	2853
GSFC	Stothers, R.	STATE U NY-STONY BRK	NGL 33-015-082	Owen, T.	11	2854
GSFC	Thaddeus, P.	STATE U NY-STONY BRK	NGL 33-015-082	Owen, T.	11	2854
GSFC	Mangus, J. D.	STATE U NY-STONY BRK	NGR 33-015-068	Stroke, G. W.	13	2857
GSFC	Creveling, C. J.	SYRACUSE UNIVERSITY	NGR 33-022-125	Foster, G. H.	21	2874
GSFC	Pease, P. B.	SYRACUSE UNIVERSITY	NGR 33-022-150	Foster, G. H.	21	2876
GSFC	Pritchard, J. A.	SYRACUSE UNIVERSITY	NGR 33-022-150	Foster, G. H.	21	2876
GSFC	Gridley, D. H.	TEXAS A&M UNIVERSITY	NAS 5-11911	Simmons, D. B.	21	3242
GSFC	Damon, E. P.	TEXAS A&M UNIVERSITY	NAS 5-11911	Simmons, D. B.	21	3242
GSFC	Damon, E. P.	TEXAS A&M UNIVERSITY	NAS 5-11988	Simmons, D. B.	21	3243
GSFC	Stonesifer, G. R.	TEXAS A&M UNIVERSITY	NAS 5-21857	Rouse, J. W., Jr.	59	3244
GSFC	Fihelly, A. W.	TEXAS TECH UNIV	NAS 5-21720	Miller, W. D.	39	3275
GSFC	Stonesifer, G. R.	UNIV ALA-TUSCALOOSA	NAS 5-21876	Henry, H. R.	32	1074
GSFC	Crump, E. W.	UNIV ALASKA-FAIRBNKS	NAS 5-21833	Belon, A. E.	32	1093
GSFC	Ragland, T. M.	UNIV ALASKA-FAIRBNKS	NAS 5-21833	Belon, A. E.	32	1093
GSFC	Smith, W. S.	UNIV ALASKA-FAIRBNKS	NAS 5-22167	Staley, G.	33	1094
GSFC	Stolarik, J. D.	UNIV ALASKA-FAIRBNKS	NAS 5-23085	Wescott, E. M.	31	1095
GSFC	Heppner, J. P.	UNIV ALASKA-FAIRBNKS	NAS 5-23085	Wescott, E. M.	31	1095
GSFC	Janniche, P. A.	UNIV OF ARIZONA	NAS 5-11425	Bowen, T.	11	1117
GSFC	Browning, R. K.	UNIV OF ARIZONA	NAS 5-11425	Bowen, T.	11	1117
GSFC	Meese, K. J.	UNIV OF ARIZONA	NAS 5-11444	L'Heureux, J. J.	13	1118
GSFC	Chin, E. S.	UNIV OF ARIZONA	NAS 5-11456	Marathy, A. S.	11	1119
GSFC	Bogges, N. W.	UNIV OF ARIZONA	NAS 5-21484	Kuiper, G. P.	11	1120
GSFC	Hamilton, T.	UNIV OF ARIZONA	NAS 5-21484	Kuiper, G. P.	11	1120
GSFC	Hovis, W. A.	UNIV OF ARIZONA	NAS 5-21661	Coffeen, D. L.	31	1121
GSFC	Stonesifer, G. R.	UNIV OF ARIZONA	NAS 5-21777	Hendrickson, J. R.	33	1122
GSFC	Stonesifer, G. R.	UNIV OF ARIZONA	NAS 5-21812	McGinnies, W. G.	59	1123
GSFC	Stonesifer, G. R.	UNIV OF ARIZONA	NAS 5-21819	Lowe, C. H.	59	1124
GSFC	Stonesifer, G. R.	UNIV OF ARIZONA	NAS 5-21820	Smith, E. L., Jr.	39	1125
GSFC	Stonesifer, G. R.	UNIV OF ARIZONA	NAS 5-21849	Slater, P. N.	99	1126
GSFC	Stecher, T. P.	UNIV OF ARIZONA	NAS 5-22121	Kuiper, G. P.	11	1127
GSFC	Browning, R. K.	UNIV OF ARIZONA	NAS 5-23176	Bowen, T.	11	1128
GSFC	Curran, R. J.	UNIV OF ARIZONA	NGR 03-002-155	Herman, B. M.	31	1149
GSFC	Hoffman, W. F.	UNIV OF ARIZONA	NGR 03-002-180	Lee, T. A.	11	1151
GSFC	Stothers, R.	UNIV OF ARIZONA	NGR 03-002-180	Lee, T. A.	11	1151
GSFC	Abercrombie, R.	UNIV OF ARIZONA	NGR 03-002-184	Johnston, H. L.	11	1152
GSFC	Draper, L. T.	UNIV OF ARIZONA	NGR 03-002-184	Johnston, H. L.	11	1152
GSFC	Wales, R.	UNIV CALIF-BERKELEY	NAS 5-10362	Mozar, F. S.	45	1377
GSFC	Madden, J. J.	UNIV CALIF-BERKELEY	NAS 5-11038	Anderson, R. A.	13	1378
GSFC	Crump, E. W.	UNIV CALIF-BERKELEY	NAS 5-21827	Colwell, R. N.	32	1379
GSFC	Thole, J. M.	UNIV CALIF-BERKELEY	NAS 5-23030	Heckman, H. H.	13	1380
GSFC	Douley, J. L.	UNIV CALIF-BERKELEY	NAS 5-23030	Heckman, H. H.	13	1380
GSFC	Douley, J. L.	UNIV CALIF-BERKELEY	NAS 5-23031	Boyer, C. S.	11	1381

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
GSFC	Thole, J. M.	UNIV CALIF-BERKELEY	NAS 5-23031	Boyer, C. S.	11	1381
GSFC	Northrop, T. G.	UNIV CALIF-BERKELEY	NGL 05-003-220	Kaufman, A. N.	13	1399
GSFC	Plotkin, H. H.	UNIV CALIF-BERKELEY	NGL 05-003-272	Tounes, C. H.	19	1401
GSFC	Miller, J. E.	UNIV CALIF-BERKELEY	NGR 05-003-143	Algazi, V. R.	45	1408
GSFC	Lynch, T. J.	UNIV CALIF-BERKELEY	NGR 05-003-143	Algazi, V. R.	45	1408
GSFC	Lynch, T. J.	UNIV CALIF-BERKELEY	NGR 05-003-538	Algazi, V. R.	45	1438
GSFC	Meese, K. J.	UNIV CALIF-L ANGELES	NAS 5-9097	Coleman, P. J.	13	1470
GSFC	Meese, K. J.	UNIV CALIF-L ANGELES	NAS 5-9098	Coleman, P. J.	13	1471
GSFC	Kutz, R.	UNIV CALIF-L ANGELES	NAS 5-10167	Balakrishnan, A. V.	45	1472
GSFC	Wales, R. O.	UNIV CALIF-L ANGELES	NAS 5-11674	Coleman, P. J.	32	1473
GSFC	Northrop, T. G.	UNIV CALIF-L ANGELES	NGL 05-007-066	Wong, A. Y.	13	1487
GSFC	Mentzer, R. H.	UNIV CALIF-L ANGELES	NGL 05-007-066	Wong, A. Y.	13	1487
GSFC	Bandeem, W. R.	UNIV CALIF-L ANGELES	NGR 05-007-091	Mintz, Y.	31	1495
GSFC	Halem, M.	UNIV CALIF-L ANGELES	NGR 05-007-328	Mintz, Y.	31	1509
GSFC		UNIV CALIF-L ANGELES	NGR 05-007-328	Mintz, Y.	31	1509
GSFC	Crump, E. W.	UNIV CALIF-RIVERSIDE	NAS 5-21771	Lewis, L. N.	39	1519
GSFC	Temkin, A.	UNIV CALIF-RIVERSIDE	NGL 05-008-005	Poe, R. T.	13	1520
GSFC	Wainscott, F. W., II	UNIV CALIF-SAN DIEGO	NAS 5-10363	Mellwain, C. E.	31	1526
GSFC	Wales, R.	UNIV CALIF-SAN DIEGO	NAS 5-10364	Mellwain, C. E.	31	1527
GSFC	Thole, J. M.	UNIV CALIF-SAN DIEGO	NAS 5-11080	Peterson, L. E.	11	1528
GSFC	Donley, J.	UNIV CALIF-SAN DIEGO	NAS 5-11080	Peterson, L. E.	11	1528
GSFC	Donley, J.	UNIV CALIF-SAN DIEGO	NAS 5-11081	Peterson, L. E.	11	1529
GSFC	Thole, J. M.	UNIV CALIF-SAN DIEGO	NAS 5-11081	Peterson, L. E.	11	1529
GSFC	Wales, R. O.	UNIV CALIF-SAN DIEGO	NAS 5-21055	Mellwain, C. E.	31	1530
GSFC	Carrión, W. J.	UNIV CALIF-SAN DIEGO	NGL 05-009-079	Helstom, C. W.	13	1542
GSFC	Lancaster, E. R.	UNIV CALIF-S BARBARA	NGL 05-010-020	Mitchell, T. P.	46	1575
GSFC	Meese, K. J.	UNIV OF CHICAGO	NAS 5-9096	Meyer, P.	13	1910
GSFC	Meese, K. J.	UNIV OF CHICAGO	NAS 5-9366	Simpson, J. A.	13	1911
GSFC	Ferer, B. H.	UNIV OF CHICAGO	NAS 5-11037	Simpson, J. A.	13	1912
GSFC	Davis, M. A.	UNIV OF CHICAGO	NAS 5-11067	Simpson, J. D.	13	1913
GSFC	Shenk, W. E.	UNIV OF CHICAGO	NGR 14-001-008	Fujita, T. T.	31	1928
GSFC	Theon, J. S.	UNIV OF CHICAGO	NGR 14-001-193	Lindzen, R. S.	31	1937
GSFC	Wexler, R.	UNIV OF CHICAGO	NGR 14-001-193	Lindzen, R. S.	31	1937
GSFC	Christie, C. J.	UNIV OF CHILE	NAS 5-1925	Detigny, E.	31	3616
GSFC	Staff, W. O.	UNIV COLORADO-BOLDR	NAS 5-3931	Rense, W. A.	13	1651
GSFC	Meese, K. J.	UNIV COLORADO-BOLDR	NAS 5-9307	Barth, C. A.	13	1652
GSFC	Meese, K. J.	UNIV COLORADO-BOLDR	NAS 5-9327	Thomas, G. E.	13	1653
GSFC	Donley, J. L.	UNIV COLORADO-BOLDR	NAS 5-11363	Brunner, E. C.	13	1654
GSFC	Scott, D. H.	UNIV COLORADO-BOLDR	NAS 5-11363	Brunner, E. C.	13	1654
GSFC	Grimes, D. W.	UNIV COLORADO-BOLDR	NAS 5-11405	Barth, C. A.	31	1655
GSFC	Findlay, J. A.	UNIV COLORADO-BOLDR	NAS 5-11405	Barth, C. A.	31	1655
GSFC	Fihelly, A. W.	UNIV OF DELAWARE	NAS 5-21784	Szekielda, K. H.	33	1725
GSFC	Fihelly, A. W.	UNIV OF DELAWARE	NAS 5-21837	Klemas, V.	39	1726
GSFC		UNIV OF DENVER	NAS 5-9883		32	1674
GSFC	Hobbs, R. W.	UNIV OF DENVER	NAS 5-23190	Edrich, J.	13	1675
GSFC	Brandt, J. C.	UNIV OF HAWAII	NAS 5-11303	Wolstencroft, R. D.	11	1866
GSFC	Morakis, J.	UNIV OF HAWAII	NGL 12-001-046	Peterson, W. W.	21	1872
GSFC	Crump, E. W.	UNIV OF IDAHO	NAS 5-21850	Tisdale, E. W.	39	1881
GSFC	Golden, T. S.	UNIV ILLINOIS-URBANA	NGR 14-005-189	Yeh, K. C.	45	1967
GSFC	Ferer, B. H.	UNIV OF IOWA	NAS 5-9074	Frank, L. A.	13	2029
GSFC	Davis, M. A.	UNIV OF IOWA	NAS 5-11039	Frank, L. A.	13	2030
GSFC	Limberis, B. R.	UNIV OF IOWA	NAS 5-11064	Frank, L. A.	13	2031
GSFC	Madden, J. S.	UNIV OF IOWA	NAS 5-11074	Gurnett, D. A.	13	2032
GSFC	Longanecker, G. W.	UNIV OF IOWA	NAS 5-11167	Gurnett, D. A.	13	2033
GSFC	Eaker, H. L.	UNIV OF IOWA	NAS 5-11265	Frank, L. A.	13	2034
GSFC	Ousley, G. W.	UNIV OF IOWA	NAS 5-11279	Gurnett, D. A.	11	2035
GSFC	White, C. E.	UNIV OF IOWA	NAS 5-11279	Gurnett, D. A.	11	2035
GSFC	Davis, M. A.	UNIV OF IOWA	NAS 5-11431	Gurnett, D. A.	13	2036

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
GSFC	Stonesifer, G. R.	UNIV OF IOWA	NAS 5-21852	Hoppin, R. A.	32	2037
GSFC	Jones, S. L.	UNIV OF IOWA	NAS 5-23112	Van Allen, J. A.	41	2038
GSFC	Stonesifer, G. R.	UNIV OF KANSAS	NAS 5-21822	Barr, B. G.	39	2049
GSFC	Davis, M. A.	UNIV MARYLAND-COL PK	NAS 5-11063	Gloeckler, G.	13	2147
GSFC	Conrath, B. J.	UNIV MARYLAND-COL PK	NAS 5-23237	Ponnamperuma, C.	12	2148
GSFC	Fainberg, J.	UNIV MARYLAND-COL PK	NGL 21-002-029	Erickson, W. C.	11	2152
GSFC	Alexander, J.	UNIV MARYLAND-COL PK	NGL 21-002-029	Erickson, W. C.	11	2152
GSFC	Pieper, G. F.	UNIV MARYLAND-COL PK	NGL 21-002-033	Laster, H.	31	2153
GSFC	Abid, G. E.	UNIV MARYLAND-COL PK	NGL 21-002-033	Laster, H.	31	2153
GSFC	Ghaffari, A.	UNIV MARYLAND-COL PK	NGL 21-002-214	Richard, J. P.	42	2155
GSFC	Schmid, P. E.	UNIV MARYLAND-COL PK	NGL 21-002-214	Richard, J. P.	42	2155
GSFC	Fainberg, J.	UNIV MARYLAND-COL PK	NGL 21-002-367	Kundu, M. R.	11	2156
GSFC	Brace, L. H.	UNIV MARYLAND-COL PK	NGR 21-002-096	Matthews, D. L.	31	2162
GSFC	Taylor, H. A.	UNIV MARYLAND-COL PK	NGR 21-002-096	Matthews, D. L.	31	2162
GSFC	Grunby, E. I.	UNIV MARYLAND-COL PK	NGR 21-002-197	Chu, Y.	21	2163
GSFC	Greene, E. P.	UNIV MARYLAND-COL PK	NGR 21-002-206	Chu, Y.	21	2165
GSFC	Richard, H. L.	UNIV MARYLAND-COL PK	NGR 21-002-216	Hochuli, U. E.	13	2166
GSFC	McGunigal, T. E.	UNIV MARYLAND-COL PK	NGR 21-002-216	Hochuli, U. E.	13	2166
GSFC	Major, F. G.	UNIV MARYLAND-COL PK	NGR 21-002-218	Alley, C. O.	13	2167
GSFC	Schaefer, D. H.	UNIV MARYLAND-COL PK	NGR 21-002-229	Rao, T. R.	45	2170
GSFC	Ogilvie, K. W.	UNIV MARYLAND-COL PK	NGR 21-002-291	Coplan, M. A.	13	2175
GSFC	Okeefe, J. A.	UNIV MARYLAND-COL PK	NGR 21-002-296	Pai, S. I.	31	2176
GSFC	Teegarden, B. J.	UNIV MARYLAND-COL PK	NGR 21-002-316	Gloeckler, G.	13	2181
GSFC	Hurt, C. R.	UNIV MARYLAND-COL PK	NGR 21-002-345	Hochuli, U. E.	45	2186
GSFC	McAvoy, N.	UNIV MARYLAND-COL PK	NGR 21-002-345	Hochuli, U. E.	45	2186
GSFC	Alford, W. L.	UNIV MARYLAND-COL PK	NGR 21-002-351	Deutsch, E. S.	99	2188
GSFC	Pease, P. B.	UNIV MARYLAND-COL PK	NGR 21-002-355	Pugsley, J. H.	45	2189
GSFC	Schnetzler, C. C.	UNIV MARYLAND-COL PK	NGR 21-002-368	Weidner, J. R.	32	2191
GSFC	Philpotts, J. A.	UNIV MARYLAND-COL PK	NGR 21-002-368	Weidner, J. R.	32	2191
GSFC	Arking, A.	UNIV MARYLAND-COL PK	NGR 21-002-378	Rosenfeld, A.	31	2192
GSFC	Smith, D. E.	UNIV MARYLAND-COL PK	NGR 21-002-390	Currie, D. G.	19	2193
GSFC		UNIV MARYLAND-COL PK	NGR 21-002-399	Weidner, J. R.	99	2195
GSFC	Major, F. G.	UNIV MD-EASTRN SHORE	NGR 21-119-001	Singh, G.	13	2199
GSFC	McAvoy, N.	UNIV MD-EASTRN SHORE	NGR 21-119-001	Singh, G.	13	2199
GSFC	Hovis, W. A.	UNIV OF MASS-AMHERST	NAS 5-21813	Yentsch, C. S.	33	2394
GSFC	Rolinski, A. J.	UNIV OF MASS-AMHERST	NGL 22-010-018	Monopoli, R. V.	45	2396
GSFC	Meese, K. J.	UNIV MICH-ANN ARBOR	NAS 5-9306	Reber, C. A.	13	2427
GSFC	Meese, K. J.	UNIV MICH-ANN ARBOR	NAS 5-9328	Reber, C. A.	13	2428
GSFC	Spencer, N. W.	UNIV MICH-ANN ARBOR	NAS 5-11073	Carignan, G. R.	13	2429
GSFC	Niemann, H. B.	UNIV MICH-ANN ARBOR	NAS 5-11128	Carignan, G. R.	31	2430
GSFC	Cooley, J. E.	UNIV MICH-ANN ARBOR	NAS 5-11128	Carignan, G. R.	31	2430
GSFC	Madden, J. J.	UNIV MICH-ANN ARBOR	NAS 5-11174	Haddock, F. T.	13	2431
GSFC	Pelz, D. T.	UNIV MICH-ANN ARBOR	NAS 5-11309	Carignan, G. R.	11	2432
GSFC	Pelz, D. T.	UNIV MICH-ANN ARBOR	NAS 5-11376	Carignan, G. R.	31	2433
GSFC	Spencer, N. W.	UNIV MICH-ANN ARBOR	NAS 5-11376	Carignan, G. R.	31	2433
GSFC	Grimes, D. W.	UNIV MICH-ANN ARBOR	NAS 5-11380	Hays, P.	31	2434
GSFC	Spencer, N. W.	UNIV MICH-ANN ARBOR	NAS 5-11380	Hays, P.	31	2434
GSFC	Spencer, N. W.	UNIV MICH-ANN ARBOR	NAS 5-21038	Carignan, G. B.	31	2435
GSFC	Wright, D. U., Jr.	UNIV MICH-ANN ARBOR	NAS 5-21147	Horvath, R.	31	2436
GSFC	Theon, J. S.	UNIV MICH-ANN ARBOR	NAS 5-21914	Mason, C. J.	31	2437
GSFC	Smith, W. S.	UNIV MICH-ANN ARBOR	NAS 5-21914	Mason, C. J.	31	2437
GSFC	Grimes, D. W.	UNIV MICH-ANN ARBOR	NAS 5-23006	Hays, P. M.	31	2438
GSFC	Findlay, J. A.	UNIV MICH-ANN ARBOR	NAS 5-23006	Hays, P. M.	31	2438
GSFC		UNIV MICH-ANN ARBOR	NAS 5-23230		41	2439
GSFC		UNIV MICH-ANN ARBOR	NAS 5-23267		45	2440
GSFC	Hughes, W. E.	UNIV MICH-ANN ARBOR	NGL 23-005-183	Haddad, G. I.	45	2450
GSFC	Maran, S. P.	UNIV MICH-ANN ARBOR	NGR 23-005-549	Haddock, F. T.	11	2475
GSFC	Wexler, R.	UNIV MICH-ANN ARBOR	NSR 23-005-376	Bartman, F. L.	31	2483

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GSFC	Staff, W. O.	U MINN-MNPLS-ST PAUL	NAS 5-3838	Epney, O.	13	2494
GSFC	Madden, J. J.	U MINN-MNPLS-ST PAUL	NAS 5-11060	Kellogg, P. J.	13	2495
GSFC	Longanecker, G. W.	U MINN-MNPLS-ST PAUL	NAS 5-11173	Cahill, L. J., Jr.	13	2496
GSFC	White, C. E.	U MINN-MNPLS-ST PAUL	NAS 5-11310	Kellogg, P. J.	13	2497
GSFC	Findlay, J. A.	U MINN-MNPLS-ST PAUL	NAS 5-11438	Nier, A. O.	31	2498
GSFC	Grimes, D. W.	U MINN-MNPLS-ST PAUL	NAS 5-11438	Nier, A. O.	31	2498
GSFC	Wainscott, F. H.	U MINN-MNPLS-ST PAUL	NAS 5-11687	Winckler, J. R.	49	2499
GSFC		U MINN-MNPLS-ST PAUL	NAS 5-23273		13	2500
GSFC	Mead, J. M.	U MINN-MNPLS-ST PAUL	NSR 24-005-245	Luyten, W. J.	11	2527
GSFC	Drummond, R.	UNIV MO-KANSAS CITY	NGR 26-001-012	Querry, M. R.	13	2565
GSFC	Golden, T. S.	UNIV MO-ROLLA	NAS 5-20282	Ziemer, R. E.	45	2567
GSFC	Deerkoski, L. F.	UNIV MO-ROLLA	NAS 5-20282	Ziemer, R. E.	45	2567
GSFC	Flatley, T. W.	UNIV MO-ROLLA	NGR 26-003-069	Taylor, J. M.	49	2571
GSFC	Crump, E. W.	UNIV OF MONTANA	NAS 5-21826	Weidman, R. M.	32	2587
GSFC	Stonesifer, G. R.	UNIV NEBRASKA-LINCLN	NAS 5-21756	Drew, J. V.	39	2589
GSFC	Aikin, A. C.	UNIV NEBRASKA-LINCLN	NAS 5-23054	Samson, J. A.	13	2590
GSFC	Kalet, M. W.	UNIV NEBRASKA-LINCLN	NAS 5-23125	Samson, J. A.	11	2591
GSFC	Crump, E. W.	UNIV OF NEVADA-RENO	NAS 5-21870	Tueller, P. A.	39	2597
GSFC	Donley, J. L.	UNIV NEW HAMPSHIRE	NAS 5-11054	Chupp, E. L.	13	2609
GSFC	Thole, J. M.	UNIV NEW HAMPSHIRE	NAS 5-11054	Chupp, E. L.	13	2609
GSFC	Trainor, J. H.	UNIV NEW HAMPSHIRE	NAS 5-11276	Webber, W. R.	11	2610
GSFC	Wainscott, F. H.	UNIV NEW HAMPSHIRE	NAS 5-11694	Arnoldy, R. L.	11	2611
GSFC		UNIV NEW HAMPSHIRE	NAS 5-23263		45	2612
GSFC	Thole, J. M.	UNIV OF NEW MEXICO	NAS 5-9275	Leavitt, C. P.	13	2694
GSFC	Donley, J. D.	UNIV OF NEW MEXICO	NAS 5-9275	Leavitt, C. P.	13	2694
GSFC	Meese, K. J.	UNIV OF NEW MEXICO	NAS 5-9314	Regener, V. H.	13	2695
GSFC	Rochelle, R. W.	UNIV OF NOTRE DAME	NGL 15-004-026	Massey, J. L.	45	2017
GSFC	Theon, J. S.	UNIV OF OSLO	NGR 52-155-002	Hesstvedt, E.	31	3625
GSFC	Bandeen, W. R.	UNIV OF OSLO	NGR 52-155-002	Hesstvedt, E.	31	3625
GSFC		UNIV OF PENNSYLVANIA	NGL 39-010-001	Altman, M.	13	3100
GSFC		UNIV OF PERU	NASW 7		49	3626
GSFC	Temkin, A.	UNIV OF PITTSBURGH	NGL 39-011-035	Gerjuoy, E.	13	3107
GSFC	Hallam, K. L.	UNIV OF RHODE ISLAND	NAS 5-21555	Nudelman, S.	45	3132
GSFC	Drummond, R. R.	UNIV OF RHODE ISLAND	NGR 40-004-022	Sadasiv, G.	45	3133
GSFC	Kutz, R. L.	UNIV OF SOUTHERN CAL	NAS 5-21505	Davisson, L. D.	45	1601
GSFC	Kutz, R. L.	UNIV OF SOUTHERN CAL	NGL 05-018-118	Davisson, L. D.	45	1609
GSFC	Miller, J. E.	UNIV OF SOUTHERN CAL	NGL 05-018-118	Davisson, L. D.	45	1609
GSFC	Ragland, T. M.	UNIV TENNESSEE-KNOXV	NAS 5-21726	Rehder, J. B.	31	3155
GSFC	Ensor, G.	UNIV TENNESSEE-KNOXV	NAS 5-21726	Rehder, J. B.	31	3155
GSFC	Ensor, G. J.	UNIV TENNESSEE-KNOXV	NAS 5-21873	Parks, W. L.	59	3156
GSFC	Ensor, G. J.	UNIV TENNESSEE-KNOXV	NAS 5-21875	Bodenheimer, R. E.	39	3157
GSFC	Ensor, G. J.	UNIV TENNESSEE-KNOXV	NAS 5-21882	De'Selm, H. R.	39	3158
GSFC	Plotkin, H. H.	UNIV TENNESSEE-KNOXV	NGL 43-001-056	Shofner, F. M.	13	3167
GSFC	Landman	UNIV TENNESSEE-KNOXV	NGL 43-001-056	Shofner, F. M.	13	3167
GSFC	Ippolito, L. J.	UNIV TEXAS-AUSTIN	NAS 5-10387	Straiton, A. W.	45	3322
GSFC	Velez, C. E.	UNIV TEXAS-AUSTIN	NGR 44-012-255	Nacozy, P. E.	21	3350
GSFC	Berbert, J. H.	UNIV TEXAS-AUSTIN	NSR 44-012-120	Tupa, B.	32	3352
GSFC	Schmid, P. E.	UNIV TEXAS-AUSTIN	NSR 44-012-120	Tupa, B.	32	3352
GSFC	Butler, P.	UNIV TEXAS-DALLAS	NAS 5-9075	Palmeira, R. A.	11	3359
GSFC	Nelson, E. D.	UNIV TEXAS-DALLAS	NAS 5-9112	Heikkila, W. J.	19	3360
GSFC	Meese, K. J.	UNIV TEXAS-DALLAS	NAS 5-9311	Hanson, W. B.	13	3361
GSFC		UNIV TEXAS-DALLAS	NAS 5-9444		13	3362
GSFC	Jackson, J. E.	UNIV TEXAS-DALLAS	NAS 5-11003	Hoffman, J. H.	31	3363
GSFC	Jackson, J. E.	UNIV TEXAS-DALLAS	NAS 5-11011	Heikkila, W. J.	31	3364
GSFC	Findlay, J. A.	UNIV TEXAS-DALLAS	NAS 5-11406	Hoffman, J. H.	31	3365
GSFC	Findlay, J. A.	UNIV TEXAS-DALLAS	NAS 5-11407	Hanson, W. B.	31	3366
GSFC	Golden, T. S.	UNIV TEXAS-DALLAS	NAS 5-23184	McClure, J. P.	31	3367
GSFC	Crump, E. W.	UNIV OF UTAH	NAS 5-21883	Jensen, M. L.	32	3412

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
GSFC	Szajna, E. F.	UNIV OF VERMONT	NAS 5-21753	Lind, A. O.	32	3427
GSFC	Bertsch, D. L.	UNIV OF VIRGINIA	NAS 5-21412	Frederick, L. W.	99	3468
GSFC	Donn, B.	UNIV OF VIRGINIA	NGL 47-005-066	Fredrick, L. W.	11	3472
GSFC	Heath, D. F.	UNIV OF WASHINGTON	NGR 48-002-125	Leovy, C. B.	31	3541
GSFC	Treon, J. S.	UNIV OF WASHINGTON	NGR 48-002-125	Leovy, C. B.	31	3541
GSFC	White, W. A.	UNIV WISC-MADISON	NAS 5-1348	Code, A. D.	11	3565
GSFC	Davis, M. A.	UNIV WISC-MADISON	NAS 5-11068	Scherb, F.	13	3566
GSFC	Limberis, W. R.	UNIV WISC-MADISON	NAS 5-11068	Scherb, F.	13	3566
GSFC	Donley, J. O.	UNIV WISC-MADISON	NAS 5-11361	Kraushar, W. L.	13	3567
GSFC	Thole, J. M.	UNIV WISC-MADISON	NAS 5-11361	Kraushar, W. L.	13	3567
GSFC	Nordberg, W.	UNIV WISC-MADISON	NAS 5-11542	Suomi, V. E.	31	3568
GSFC	Bandeem, W. R.	UNIV WISC-MADISON	NAS 5-21607	Suomi, V. E.	31	3569
GSFC	Bandeem, W. R.	UNIV WISC-MADISON	NAS 5-21650	Suomi, V. E.	31	3570
GSFC	Stonesifer, G. R.	UNIV WISC-MADISON	NAS 5-21754	Clapp, J. L.	32	3571
GSFC	Greaves, J. R.	UNIV WISC-MADISON	NAS 5-21794	Erickson, R. W.	31	3572
GSFC	Bandeem, W. R.	UNIV WISC-MADISON	NAS 5-21798	Suomi, V. E.	31	3573
GSFC	Halem, M.	UNIV WISC-MADISON	NGR 50-002-215	Suomi, V. E.	31	3598
GSFC	Durocher, N. L.	UNIV WISC-MADISON	NGR 50-002-215	Suomi, V. E.	31	3598
GSFC	Stonesifer, G. R.	UNIV OF WYOMING	NAS 5-21799	Houston, R. S.	32	3601
GSFC	Fihelly, A. W.	UNIV OF WYOMING	NAS 5-21818	Houston, R. S.	32	3602
GSFC	Thole, J. M.	UNIV OF WYOMING	NAS 5-23028	Pepin, T. J.	31	3603
GSFC	Douley, J. L.	UNIV OF WYOMING	NAS 5-23028	Pepin, T. J.	31	3603
GSFC	Fihelly, A. W.	VIRGINIA POLY INST	NAS 5-21729	Glover, L., III	32	3497
GSFC	Hirschmann, E.	VIRGINIA POLY INST	NGR 47-004-091	Bostian, C. W.	45	3509
GSFC	Walter, L. S.	VIRGINIA POLY INST	NGR 47-004-093	Gibbs, G. V.	12	3510
GSFC	Fedor, J. V.	VIRGINIA POLY INST	NGR 47-004-098	Meirovitch, L.	42	3512
GSFC	Bell, L. W.	VIRGINIA POLY INST	NGR 47-004-098	Meirovitch, L.	42	3512
GSFC	Fedor, J. V.	VIRGINIA POLY INST	NGR 47-004-100	Meirovitch, L.	42	3513
GSFC	Hrastar, J. A.	VIRGINIA POLY INST	NGR 47-004-100	Meirovitch, L.	42	3513
GSFC	Dod, L. R.	VIRGINIA POLY INST	NGR 47-004-102	Galindo, V.	45	3515
GSFC	Dod, L. R.	VIRGINIA POLY INST	NGR 47-004-103	Stutzman, W. L.	45	3516
GSFC	Findlay, J. A.	YALE UNIVERSITY	NAS 5-23004	Walker, J. W.	31	1705
GSFC	Grimes, D. W.	YALE UNIVERSITY	NAS 5-23004	Walker, J. W.	31	1705
GSFC	Strong, J. P., III	YALE UNIVERSITY	NGL 07-004-005	Barker, R. C.	45	1707
GSFC	Schaefer, D. H.	YALE UNIVERSITY	NGL 07-004-005	Barker, R. C.	45	1707
GSFC	Poltkin, H. H.	YALE UNIVERSITY	NGR 07-004-035	Lamb, W. E.	13	1714
JPL	Lewicki, G.	JOHNS HOPKINS UNIV	NGR 21-009-033	Feldman, C.	13	2141
JPL	Strand, L.	PRINCETON UNIVERSITY	NGL 31-001-109	Summerfield, M.	41	2640
JPL	King, J.	SO UNIV-BATON ROUGE	NGR 19-005-006	Chakkalakal, D. A.	11	2108
JPL	Rembaum, A.	STANFORD UNIVERSITY	NGL 05-020-242	Little, W. A.	13	1309
JPL	Rembaum, A.	TULANE UNIVERSITY	NGL 19-002-027	Hermann, A. M.	13	2114
JPL	Moore, J. W.	UNIV OF CHICAGO	NGR 14-001-199	Greene, P. H.	21	1940
JPL	Lewicki, G.	UNIV OF MAINE-ORONO	NGR 20-006-016	Clark, A. H.	13	2121
JPL	Zmuidzinas, J. S.	UNIV MARYLAND-COL PK	NGR 21-002-270	Miller, J.	21	2173
JPL	Jordan, J. F.	UNIV TEXAS-AUSTIN	NGL 44-012-008	Tapley, B. D.	42	3335
JSC	Harris, E. S.	ALBANY MED COLLEGE	NAS 9-9964	Coulston, F.	59	2707
JSC	Harris, J. W.	ARIZONA STATE UNIV	NGR 03-001-057	Moore, C. B.	12	1111
JSC	Lewallen, J. M.	AUBURN UNIV-AUBURN	NGR 01-003-008	Shaw, W. A.	42	1024
JSC		AUBURN UNIV-AUBURN	NGR 01-003-036	Fitzpatrick, P. M.	21	1025
JSC	Forbes, C. D.	AUSTIN STATE UNIV	NAS 9-12492		39	3186
JSC	Dornbach, J.	AUSTIN STATE UNIV	NAS 9-13089	Baker, R. D.	72	3187
JSC	Alexander, W. C.	BAYLOR UNIV-MED COL	NAS 9-7280	Johnson, P. C.	52	3188
JSC	Harris, E. S.	BAYLOR UNIV-MED COL	NAS 9-8109		59	3189
JSC	Leach, C. S.	BAYLOR UNIV-MED COL	NAS 9-10537	Campbell, B. O.	52	3190
JSC	Leach, C. S.	BAYLOR UNIV-MED COL	NAS 9-11201	Johnson, P. C.	59	3191
JSC	Day, J. L.	BAYLOR UNIV-MED COL	NAS 9-11327	Frost, J. D.	52	3192
JSC	Shumate, W. M.	BAYLOR UNIV-MED COL	NAS 9-11753	Roessler, R.	69	3193
JSC	Delucchi, M. R.	BAYLOR UNIV-MED COL	NAS 9-11855	Frost, J. D.	59	3194

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JSC	Smith, M. C., Jr.	BAYLOR UNIV-MED COL	NAS 9-12728	Nichols, B. L.	52	3195
JSC	Kimzey, S. L.	BAYLOR UNIV-MED COL	NAS 9-13139	Criswell, B. S.	53	3196
JSC	Shumate, W. H.	BAYLOR UNIV-MED COL	NAS 9-13452	Roessler, R.	53	3197
JSC	Leach, C. S.	BAYLOR UNIV-MED COL	NAS 9-13540	Di'Ferrante, N.	59	3198
JSC	Kimzey, S. L.	BAYLOR UNIV-MED COL	NGR 44-003-044		53	3199
JSC	Kimzey, S. L.	BAYLOR UNIV-MED COL	NGR 44-003-053	Nichols, B. L.	52	3200
JSC	Shumate, W. H.	BAYLOR UNIV-MED COL	NGR 44-003-054	Kellaway, P.	59	3201
JSC	Hoffler, G. W.	BOSTON UNIVERSITY	NGR 22-004-021	Chobanian, A. V.	52	2209
JSC	Harris, J. W.	BROWN UNIVERSITY	NGR 40-002-123	Rutherford, M. J.	32	3130
JSC	Eichelman, W. F.	CALIF INST OF TECH	NAS 9-11454	Scott, R. F.	19	1190
JSC	Eichelman, W. F.	CALIF INST OF TECH	NAS 9-12270	Burnet, D.	13	1191
JSC	Eichelman, W. F.	CALIF INST OF TECH	NAS 9-12585	Burnett, D. S.	31	1192
JSC	Da Silva, A. J.	CALIF INST OF TECH	NAS 9-12840	Zirin, H.	11	1193
JSC	Harris, J. W.	CALIF INST OF TECH	NGL 05-002-187	Silver, L. T.	12	1205
JSC	Harris, J. W.	CALIF INST OF TECH	NGL 05-002-188	Wasserburg, G. J.	12	1206
JSC	Harris, J. W.	CALIF INST OF TECH	NGL 05-002-190	Epstein, S.	13	1207
JSC	Bates, J. R.	CALIF INST OF TECH	NGR 05-002-159	Silver, L. T.	32	1217
JSC	Harris, J. W.	CALIF INST OF TECH	NGR 05-002-307	Ahrens, T. J.	32	1233
JSC	Harris, J. W.	CASE WESTERN RESERVE	NGL 36-027-057	Radcliffe, S. V.	12	2934
JSC	Harris, J. W.	CASE WESTERN RESERVE	NGR 36-027-021	Radcliffe, S. V.	13	2937
JSC	Harris, J. W.	CASE WESTERN RESERVE	NGR 36-027-028	Cooper, R. A.	13	2938
JSC	Batson, B. H.	CITY COLLEGE OF N Y	NGR 33-013-063	Schilling, D. L.	49	2715
JSC	Ferguson, J. K.	CLEMSON UNIV-CLEMSON	NAS 9-10494	Guthrie, R. K.	51	3135
JSC	Harris, J. W.	COLLEGE VIRGIN ISLND	NGL 52-083-009	McCord, T. B.	19	3611
JSC	Hoffman, R. A.	COLLEGE OF WM & MARY	NGR 47-006-054	Aceto, H., Jr.	51	3436
JSC	Miller, M.	COLORADO SCH OF MINE	NAS 9-13394	Lee, K.	32	1622
JSC	Dragg, J.	COLORADO STATE UNIV	NAS 9-12972	Smith, J.	31	1634
JSC	Mason, C. C.	COLORADO STATE UNIV	NAS 9-13142	Striffler, W. D.	32	1635
JSC	Harris, J. W.	COLORADO STATE UNIV	NGR 06-002-119	Lindsay, W. A.	13	1643
JSC	Benson, R. E.	COLORADO STATE UNIV	NGR 06-002-128	Lett, J. T.	51	1645
JSC	Eichleman, W. F.	COLUMBIA UNIVERSITY	NAS 9-5957	Latham, G. H.	31	2725
JSC	Eichleman, W. F.	COLUMBIA UNIVERSITY	NAS 9-6037	Langseth, M. G.	19	2726
JSC	White, T. T.	COLUMBIA UNIVERSITY	NAS 9-11751	Talwani, M.	19	2727
JSC	Harris, J. W.	COLUMBIA UNIVERSITY	NGR 33-008-169	Horai, K.	13	2739
JSC	Strangway, D. W.	COLUMBIA UNIVERSITY	NGR 33-008-174	Horai, K.	13	2740
JSC	Harris, J. W.	COLUMBIA UNIVERSITY	NGR 33-008-177	Horai, K.	13	2741
JSC	Pearce, F.	CORNELL UNIVERSITY	NAS 9-10657	Gold, T.	31	2750
JSC	Rambaut, P. C.	CORNELL UNIVERSITY	NAS 9-11030	Lutwak, L.	52	2751
JSC	Smith, M. C.	CORNELL UNIVERSITY	NAS 9-11030	Lutwak, L.	52	2751
JSC	Hicks, R. D.	CORNELL UNIVERSITY	NAS 9-13364	Hardy, E. E.	39	2752
JSC	Harris, J. W.	CORNELL UNIVERSITY	NGR 33-010-137	Gold, T.	13	2770
JSC	Harris, J. W.	CORNELL UNIVERSITY	NGR 33-010-166	Morrison, G. H.	12	2774
JSC	Miller, M. L.	DARTMOUTH COLLEGE	NAS 9-13311	Stoiber, R. E.	32	2603
JSC	Reina, B., Jr.	DUDLEY OBSERVATORY	NAS 9-10380	Hemenway, C. L.	39	2785
JSC	Levin, R. R.	DUDLEY OBSERVATORY	NAS 9-12539	Greenberg, J. M.	31	2786
JSC	Hardee, S. N.	DUDLEY OBSERVATORY	NAS 9-12557	Mercer, R. D.	11	2787
JSC	Fitch, R. C.	DUKE UNIVERSITY	NAS 9-11994	Walbaisht, M. L.	53	2886
JSC	Taylor, G. R.	EASTRN MICHIGAN UNIV	NAS 9-11562	Volz, P. A.	51	2411
JSC	Harris, J. W.	FAIRLEIGH-DICKNSON U	NGL 31-006-011	Adams, J. B.	13	2621
JSC	Fedderson, W. E.	FLORIDA STATE UNIV	NGR 10-004-071	Haythorn, W. W.	51	1783
JSC	Moseley, E. C.	FORDHAM UNIVERSITY	NAS 9-11839	Kubis, J. F.	59	2792
JSC	Fedderson, W. E.	FORDHAM UNIVERSITY	NSR 33-012-006	Kubis, J. F.	69	2794
JSC	Harris, J. W.	GEORGE WASHINGTON U	NGR 09-010-080	Wasilewski, P.	13	1759
JSC	Simon, W. E.	GEORGIA INST OF TECH	NAS 9-10415	Black, W. Z.	46	1838
JSC	Lewallen, J. M.	GRAMBLING COLLEGE	NGR 19-011-008	Foster, B. R.	59	2081
JSC	Benson, R. E.	GRAMBLING COLLEGE	NGR 19-011-008	Foster, B. R.	59	2081
JSC	Bogard, D. D.	GRAMBLING COLLEGE	NGR 19-011-012	Sabu, D. D.	43	2083
JSC	Bonner, G.	GRAMBLING COLLEGE	NGR 19-011-014	Cross, M. A.	13	2085

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JSC	Olree, H. D.	HARDING COLLEGE	NAS 9-9433		52	1172
JSC	Smith, M. C.	HARVARD UNIVERSITY	NAS 9-13370	Hegsted, D. M.	59	2221
JSC	Harris, J. W.	HARVARD UNIVERSITY	NGI 22-007-247	Hays, J. F.	12	2230
JSC	Harris, J. W.	HARVARD UNIVERSITY	NGR 22-007-191	Fronde, C.	32	2236
JSC	Harris, J. W.	HARVARD UNIVERSITY	NGR 22-007-199	Hays, J. F.	12	2237
JSC	Bonner, G.	HOUSTON BAPTIST COL	NGR 44-081-001	Modisette, J. L.	11	3204
JSC	Harris, J. W.	INDIANA U-BLOOMINGTN	NAS 9-9974	Meinschein, W. G.	12	1975
JSC	Harris, J. W.	INDIANA U-BLOOMINGTN	NGR 15-003-105	Meinschein, W. G.	12	1982
JSC	McFadin, L. B.	JOHNS HOPKINS UNIV	NAS 9-11528	Fastie, W. G.	13	2131
JSC	Lewallen, J. M.	LAMAR UNIVERSITY	NGR 44-029-003	Cherry, L. B.	49	3205
JSC	Eggleston, J. M.	LAMAR UNIVERSITY	NGR 44-029-003	Cherry, L. B.	49	3205
JSC	Harris, J. W.	LEHIGH UNIVERSITY	NAS 9-8084	Sclar, C. B.	32	3051
JSC	Harris, J. W.	LEHIGH UNIVERSITY	NAS 9-10401	Goldstein, J. I.	32	3052
JSC	Harris, J. W.	LEHIGH UNIVERSITY	NGR 39-007-056	Goldstein, J. I.	12	3057
JSC	Kondo, Y.	LEHIGH UNIVERSITY	NGR 39-007-061	McCluskey, G. E., Jr.	13	3058
JSC	Harris, J. W.	LEHIGH UNIVERSITY	NGR 39-007-064	Sclar, C. B.	13	3059
JSC	Craddock, W.	LA STATE U-BAT ROUGE	NAS 9-10986	Jones, W. V.	13	2092
JSC	Eandi, R. D.	LA STATE U-BAT ROUGE	NAS 9-10986	Jones, W. V.	13	2092
JSC	Moseley, W. M.	LA STATE U-BAT ROUGE	NAS 9-12352	Daniel, L. R., Jr.	41	2093
JSC	Teixeira, C.	LA STATE U-BAT ROUGE	NAS 9-12352	Daniel, L. R., Jr.	41	2093
JSC	Kimzey, S. L.	LA STATE U-BAT ROUGE	NGR 19-001-085	Wilkens, B.	51	2100
JSC	Walkinshaw, C. H.	LA STATE U-NEW ORLNS	NAS 9-11339	Laseter, J. L.	51	2102
JSC	Wooley, B. G.	LA STATE U-NEW ORLNS	NAS 9-11339	Laseter, J. L.	51	2102
JSC	Wooley, B. C.	LA STATE U-NEW ORLNS	NAS 9-12941	Laseter, J. L.	51	2103
JSC	Walkinshaw, C. H.	LA STATE U-NEW ORLNS	NAS 9-12941	Laseter, J. L.	51	2103
JSC	Giuli, R. T.	LA STATE U-SHREVEPT	NAS 9-9317	Moss, T. A.	11	2104
JSC	Tribble, E. L., Jr.	MASS INST OF TECH	NAS 9-4065	Driscoll, D. C.	42	2286
JSC	Jones, M. E.	MASS INST OF TECH	NAS 9-6823	Ragan, R.	21	2287
JSC	Jones, M. E.	MASS INST OF TECH	NAS 9-8242	Sears, N.	42	2288
JSC	Giuli, R. T.	MASS INST OF TECH	NAS 9-8328	Weiss, R.	11	2289
JSC	Cox, K. J.	MASS INST OF TECH	NAS 9-10268	Sears, N. E.	42	2290
JSC	Heidelbaugh, N. D.	MASS INST OF TECH	NAS 9-10658	Labuza, T. P.	59	2291
JSC	Smith, M. C.	MASS INST OF TECH	NAS 9-10658	Labuza, T. P.	59	2291
JSC	Stewart, E. B.	MASS INST OF TECH	NAS 9-10748	Simmons, M. G.	19	2292
JSC	Tewart, R. S.	MASS INST OF TECH	NAS 9-10749	Wing, C. G.	32	2293
JSC	Rambaut, P. C.	MASS INST OF TECH	NAS 9-10754	Scrimshaw, N. S.	59	2294
JSC	Cubley, D.	MASS INST OF TECH	NAS 9-11540	Simmons, D. G.	19	2295
JSC	Holley, M. H.	MASS INST OF TECH	NAS 9-11555	Harper, J.	19	2296
JSC	Smith, E. E., Jr.	MASS INST OF TECH	NAS 9-11764	Olsen, E.	42	2297
JSC	Hoffler, G. W.	MASS INST OF TECH	NAS 9-12289	Lees, R. S.	52	2298
JSC	Eichelman, W. F.	MASS INST OF TECH	NAS 9-12334	Toksoz, M. N.	31	2299
JSC	Heidelbaugh, N. D.	MASS INST OF TECH	NAS 9-12485	Karel, M.	53	2300
JSC	Fuller, J. F.	MASS INST OF TECH	NAS 9-13207	Hoag, D.	41	2301
JSC	Harris, J. W.	MASS INST OF TECH	NGR 22-009-540	Simmons, G.	13	2348
JSC	Harris, J. W.	MASS INST OF TECH	NGR 22-009-543	Biemann, K.	12	2349
JSC	Harris, J. W.	MASS INST OF TECH	NGR 22-009-551	Burns, R. G.	12	2350
JSC	Harris, J. W.	MASS INST OF TECH	NGR 22-009-597	Westphal, W. B.	13	2352
JSC	Harris, J. W.	MASS INST OF TECH	NGR 22-009-646	Uhlmann, D. R.	47	2360
JSC	Kirby, R. R.	MICHIGAN STATE UNIV	NAS 9-13332	Manderscheid, L. V.	19	2414
JSC	Arndt, G. D.	NEW MEX ST U-LAS CR	NGR 32-003-037	Carden, F. F.	45	2692
JSC	Byrns, Z. H.	NEW YORK UNIVERSITY	NAS 9-13356	Pierson, W. J., Jr.	39	2808
JSC	Bailey, J. V.	NEW YORK UNIVERSITY	NGR 33-016-102	Post, J.	52	2812
JSC	Barnes, C. A.	NEW YORK UNIVERSITY	NGR 33-016-102	Post, J.	52	2812
JSC	Golden, R. L.	NO CAROLINA STATE U	NAS 9-9522	Goldstein, J. I.	13	2897
JSC	Hicks, R. D.	NO CAROLINA STATE U	NAS 9-13321	Welby, C.	39	2898
JSC	Kimzey, S. L.	NO TEXAS STATE UNIV	NAS 9-13221		52	3206
JSC	Harris, J. W.	NORTHEASTERN UNIV	NGR 22-011-069	Perry, C. H.	13	2383
JSC	Mansur, S. R.	NORTHWESTERN UNIV	NAS 9-7222	Ray, J. W.	11	1889

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
SC	Henize, K. G.	NORTHWESTERN UNIV	NAS 9-12280	Hynek, J. A.	11	1890
SC	Kondo, Y.	NORTHWESTERN UNIV	NGR 14-007-048	Hynek, J. A.	11	1896
SC	Eandi, B. K.	OAKLAND UNIVERSITY	NGR 23-054-006	Haskell, R. E.	13	2422
SC	Nance, R. L.	OHIO STATE UNIV	NAS 9-9695	Mueller, I. I.	32	2959
SC	Norman, P.	OHIO STATE UNIV	NAS 9-9696	Ghosh, S. K.	32	2960
SC	Nance, R. L.	OHIO STATE UNIV	NAS 9-13093	Mueller, I. I.	19	2961
SC	French, B. O.	OLD DOMINION UNIV	NAS 9-13410	Keshock, E. G.	46	3447
SC	High, R. W.	OREGON STATE UNIV	NGL 38-002-032	Schmitt, R. A.	11	3014
SC	Cour-Palais, B.	OREGON STATE UNIV	NGL 38-002-032	Schmitt, R. A.	11	3014
SC	Harris, J. W.	OREGON STATE UNIV	NGL 38-002-039	Schmitt, R. A.	13	3015
SC	Miller, M. L.	PENNSYLVANIA STATE U	NAS 9-13406	McMurtry, G. J.	32	3069
SC	Harris, J. W.	PENNSYLVANIA STATE U	NGR 39-009-183	Roy, R.	13	3085
SC	Harris, J. W.	PENNSYLVANIA STATE U	NGR 39-009-184	Muan, A.	13	3086
SC	Harris, J. W.	PENNSYLVANIA STATE U	NGR 39-009-186	Smith, D. K.	13	3087
SC	Homick, J. L.	PENNSYLVANIA STATE U	NGR 39-009-204	Kales, A.	59	3088
SC	Mechelay, J. E.	PORTLAND STATE UNIV	NAS 9-13482	Fitzgerald, A.	39	3022
SC	Lwallen, J. M.	PRAIRIE VIEW A&M COL	NGR 44-033-002	Yeh, H. Y.	47	3207
SC	McCutehen, D. K.	PRAIRIE VIEW A&M COL	NGR 44-033-002	Yeh, H. Y.	47	3207
SC	Williams, R. J.	PRAIRIE VIEW A&M COL	NGR 44-033-014	Stubblefield, C. T.	12	3208
ISC	Lwallen, J. M.	PRAIRIE VIEW A&M COL	NGR 44-033-015	Sohel, M. S.	43	3209
ISC	Lwallen, J. M.	PRAIRIE VIEW A&M COL	NGR 44-033-016	Yeh, H. Y.	46	3210
ISC	Harris, J. W.	PRINCETON UNIVERSITY	NGL 31-001-283	Brown, G. E.	12	2646
ISC	Harris, J. W.	PRINCETON UNIVERSITY	NGR 31-001-205	Hollister, L. S.	12	2657
JSC	Harris, J. W.	PRINCETON UNIVERSITY	NGR 31-001-208	Hargraves, R. B.	13	2658
JSC	Heidelbaugh, N. D.	PURDUE UNIVERSITY	NAS 9-10823	Haugh, C. G.	59	1989
ISC	Hicks, R. D.	PURDUE UNIVERSITY	NAS 9-13301	Silva, L. F.	39	1990
JSC	Hicks, R.	PURDUE UNIVERSITY	NAS 9-13380	Hoffer, R. M.	39	1991
JSC	Potter, A. E.	PURDUE UNIVERSITY	NGL 15-005-112	Landgrebe, D. A.	13	1994
JSC	Harris, J. W.	PURDUE UNIVERSITY	NGL 15-005-175	Taylor, L. A.	13	1996
JSC	Harris, J. W.	PURDUE UNIVERSITY	NGR 15-005-157	Meyer, H. O.	13	2005
JSC	Harris, J. W.	PURDUE UNIVERSITY	NGR 15-005-164	Taylor, L. A.	13	2007
JSC	Eichelman, W. F.	RICE UNIVERSITY	NAS 9-5884	Reasoner, D. L.	19	3214
JSC	Eichelman, W. F.	RICE UNIVERSITY	NAS 9-5911	Freeman, J. W.	13	3215
JSC	Eichelman, W. F.	RICE UNIVERSITY	NAS 9-10428	Low, F.	39	3216
JSC	Jaax, J. R.	RICE UNIVERSITY	NAS 9-11827	Davis, S. H.	43	3217
JSC	Baker, K.	RICE UNIVERSITY	NAS 9-12776	Lynn, S.	21	3218
JSC	Walkinshaw, C. H.	RICE UNIVERSITY	NAS 9-12912	Ward, C. H.	51	3219
JSC	Wooley, B. C.	RICE UNIVERSITY	NAS 9-12912	Ward, C. H.	51	3219
JSC	Harris, J. W.	RICE UNIVERSITY	NGL 44-006-127	Heymann, D.	32	3223
JSC	Harris, J. W.	RICE UNIVERSITY	NGR 44-006-142	Powell, B. N.	32	3225
JSC	Harris, J. W.	RICE UNIVERSITY	NGR 44-006-144	Adams, J. A.	13	3226
JSC	Youngblood, J. L.	RICE UNIVERSITY	NGR 44-006-148	Rabson, T. A.	47	3227
JSC	Hudson, R. D.	RICE UNIVERSITY	NGR 44-006-156	Stebbins, R. F.	13	3228
JSC	Hudson, R. D.	RICE UNIVERSITY	NGR 44-006-169	Walters, G. K.	13	3229
JSC	Youngblood, J. L.	RICE UNIVERSITY	NGR 44-006-170	Tittel, F. K.	45	3230
JSC	Kirby, R. R.	SO DAKOTA STATE UNIV	NAS 9-13337	Myers, V. I.	19	3150
JSC	Weeks, E.	STANFORD UNIVERSITY	NAS 9-5632	Kovach, R. L.	39	1293
JSC	Hensley, W.	STANFORD UNIVERSITY	NAS 9-7313	Lyon, R. J.	32	1294
JSC	Lafferty, P. E.	STANFORD UNIVERSITY	NAS 9-10579	Howard, H. T.	39	1295
JSC	White, T. T.	STANFORD UNIVERSITY	NAS 9-13357	Lyon, R. J.	19	1296
JSC	Schumate, W. H.	STANFORD UNIVERSITY	NGR 05-020-576	Barckas, J. D.	69	1348
JSC	Rummel, J.	STANFORD UNIVERSITY	NGR 05-020-632	Lederberg, J.	53	1355
JSC	Harris, J. W.	STANFORD UNIVERSITY	NGR 05-020-633	Nur, A.	13	1356
JSC	Harris, J. W.	STATE UNIV NY-BUFFAL	NGR 33-183-004	Cadenhead, D. A.	13	2848
JSC	Hardee, S. N.	STATE U NY-STONY BRK	NAS 9-11640	Owen, T.	39	2850
JSC	Harris, J. W.	STATE U NY-STONY BRK	NGL 33-015-130	Papike, J.	13	2855
JSC	Harris, J. W.	STATE U NY-STONY BRK	NGL 33-015-174	Schaeffer, O. A.	12	2856
JSC	Harris, J. W.	STATE U NY-STONY BRK	NGR 33-015-133	Funkhouser, J.	12	2858

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JSC	Harris, J. W.	STATE U NY-STONY BRK	NGR 33-015-154	Carter, N. L.	13	2863
JSC	Leach, C. S.	ST U NY-UPST MED CTR	NAS 9-11846	Miller, M.	59	2868
JSC	Hardee, S. N.	ST U NY COL-GENESCO	NAS 9-12770	Young, R. A.	32	2869
JSC	Johnston, D. A.	TEXAS A&I UNIVERSITY	NGR 44-073-003	Speed, F. M.	19	3240
JSC	Lewallen, J. M.	TEXAS A&I UNIVERSITY	NGR 44-073-003	Speed, F. M.	19	3240
JSC	Hoffman, R. A.	TEXAS A&M UNIVERSITY	NAS 9-9053	Hightower, D.	52	3248
JSC	Arndt, G. D.	TEXAS A&M UNIVERSITY	NAS 9-9285	Haden, C. R.	45	3249
JSC	Moseley, W. C., Jr.	TEXAS A&M UNIVERSITY	NAS 9-9766	Lowy, S. H.	41	3250
JSC	Potter, A. E.	TEXAS A&M UNIVERSITY	NAS 9-11155	Rouse, J. W.	39	3251
JSC	Moseley, W. C., Jr.	TEXAS A&M UNIVERSITY	NAS 9-11303	Cavin, R. K., III	41	3252
JSC	Jenkins, L. W.	TEXAS A&M UNIVERSITY	NAS 9-11658	Norton, D. J.	41	3253
JSC	Taylor, G. R.	TEXAS A&M UNIVERSITY	NAS 9-11931	Foster, B. G.	51	3254
JSC	Walkinshaw, C. H.	TEXAS A&M UNIVERSITY	NAS 9-12050	Halliwell, R. S.	39	3255
JSC	Heidelbaugh, N. D.	TEXAS A&M UNIVERSITY	NAS 9-12434	Burns, E. E.	59	3256
JSC	Richmond, R. G.	TEXAS A&M UNIVERSITY	NAS 9-12586	Smathers, J. B.	13	3257
JSC	Ehlers, H. K.	TEXAS A&M UNIVERSITY	NAS 9-12586	Smathers, J. B.	13	3257
JSC	Wooley, B. C.	TEXAS A&M UNIVERSITY	NAS 9-12671	Halliwell, R. S.	51	3258
JSC	Walkinshaw, C. H.	TEXAS A&M UNIVERSITY	NAS 9-12671	Halliwell, R. S.	51	3258
JSC	Mc Pherson, T. M.	TEXAS A&M UNIVERSITY	NAS 9-13349	Burnett, N. C.	33	3259
JSC	Walkinshaw, C. H.	TEXAS A&M UNIVERSITY	NAS 9-13374	Kuykendall, W. E., Jr.	51	3260
JSC	Potter, A. E.	TEXAS A&M UNIVERSITY	NAS 9-13545	Toler, R. W.	32	3261
JSC	Stebbins, F. J.	TEXAS A&M UNIVERSITY	NGL 44-001-044	Stricklin, J. A.	13	3263
JSC	Johnston, D.	TEXAS A&M UNIVERSITY	NGR 44-001-095	Hartley, H. O.	99	3265
JSC	Lewallen, J. M.	TEXAS A&M UNIVERSITY	NGR 44-001-095	Hartley, H. O.	99	3265
JSC	Cour-Palais, B. G.	TEXAS A&M UNIVERSITY	NGR 44-001-106	Rodenberger, C. A.	49	3266
JSC	Fedderson, W. E.	TEXAS CHRISTIAN UNIV	NGR 44-009-030	Sells, S. B.	62	3272
JSC		TEXAS SOUTHERN UNIV	NAS 9-8795		76	3273
JSC	Day, J. L.	TEXAS TECH UNIV	NAS 9-11162	Portnoy, W. M.	45	3276
JSC	MacDonald, R. B.	TEXAS TECH UNIV	NAS 9-12775	Odell, P. L.	21	3277
JSC	Baker, K.	TEXAS TECH UNIV	NAS 9-12775	Odell, P. L.	21	3277
JSC	Eandi, B. K.	TEXAS TECH UNIV	NGR 44-011-050	Coherty, W. A.	21	3278
JSC	Rambaut, P. C.	TEXAS WOMANS UNIV	NAS 9-9755	Mack, P. B.	59	3281
JSC	Smith, M. C.	TEXAS WOMANS UNIV	NAS 9-9755	Mack, P. B.	59	3281
JSC	Jackson, M. M.	TUFTS UNIVERSITY	NGR 22-012-026	Spodick, D. H.	51	2391
JSC	Tilton, E. L.	TULANE UNIVERSITY	NAS 9-12966		33	2113
JSC	Fedderson, W. E.	TUSKEGEE INSTITUTE	NGR 01-005-017	Sellers, J. P.	46	1034
JSC	Trichel, M. C.	UNIV ALASKA-FAIRBNKS	NAS 9-11329	Davis, T. N.	45	1097
JSC	Trichel, M. C.	UNIV ALASKA-FAIRBNKS	NAS 9-11815	Davis, T. N.	39	1098
JSC	Konradi, A.	UNIV ALASKA-FAIRBNKS	NAS 9-12649		11	1099
JSC	Laidley, R.	UNIV ALASKA-FAIRBNKS	NGL 02-001-063	Forbes, R. B.	32	1100
JSC	Morrison, D.	UNIV ALASKA-FAIRBNKS	NGL 02-001-063	Forbes, R. B.	32	1100
JSC	Craddock, W.	UNIV OF ARIZONA	NAS 9-11884	Krider, E. P.	13	1134
JSC	Mendell, W. W.	UNIV OF ARIZONA	NAS 9-12613	Kuiper, G. P.	42	1135
JSC	Harris, J. W.	UNIV OF ARIZONA	NGR 03-002-237	Nagy, B.	12	1157
JSC	Hardee, N.	U ARKANSAS-MONTICELLO	NAS 9-13196	Delton, R. A.	13	1175
JSC	Craddock, W.	UNIV CALIF-BERKELEY	NAS 9-7801	Alvarez, L. W.	31	1385
JSC	Harris, J. W.	UNIV CALIF-BERKELEY	NAS 9-7889	Calvin, M.	12	1386
JSC	Harris, J. W.	UNIV CALIF-BERKELEY	NAS 9-8806	Alvarez, L. W.	32	1387
JSC	Lafferty, P.	UNIV CALIF-BERKELEY	NAS 9-10509	Anderson, K. A.	39	1388
JSC	Rambaut, P.	UNIV CALIF-BERKELEY	NAS 9-10930	Calloway, D.	59	1389
JSC	Smith, M.	UNIV CALIF-BERKELEY	NAS 9-10930	Calloway, D.	59	1389
JSC	Robbins, D. E.	UNIV CALIF-BERKELEY	NAS 9-11024	Bowyer, C. S.	11	1390
JSC	Miller, M.	UNIV CALIF-BERKELEY	NAS 9-11266	Mitchell, J. K.	19	1391
JSC		UNIV CALIF-BERKELEY	NAS 9-12005		32	1392
JSC	Harris, J. W.	UNIV CALIF-BERKELEY	NGL 05-003-409	Reynolds, J. H.	13	1404
JSC	Harris, J. W.	UNIV CALIF-BERKELEY	NGL 05-003-410	Price, P. B.	13	1405
JSC	Harris, J. W.	UNIV CALIF-BERKELEY	NGR 05-003-418	Calvin, M.	12	1415
JSC	Harris, J. W.	UNIV CALIF-BERKELEY	NGR 05-003-435	Burlingame, A. L.	12	1418

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JSC	Strangway, D. W.	UNIV CALIF-BERKELEY	NGR 05-003-447	Morrison, H. F.	19	1420
JSC	Ghose, S.	UNIV CALIF-BERKELEY	NGR 05-003-486		13	1433
JSC	Harris, J. W.	UNIV CALIF-BERKELEY	NGR 05-003-512	Morrison, H. F.	13	1437
JSC	Leach, C. S.	UNIV CALIF-DAVIS	NAS 9-13504	Beljan, J. R.	52	1453
JSC	Jackson, M. M.	UNIV CALIF-DAVIS	NGR 05-004-026	Carlson, L. D.	53	1458
JSC	Hoffler, G. W.	UNIV CALIF-DAVIS	NGR 05-004-026	Carlson, L. D.	53	1458
JSC	Harris, J. W.	UNIV CALIF-DAVIS	NGR 05-004-076	MacGregor, I. D.	13	1462
JSC	Delucchi, M. R.	UNIV CALIF-L ANGELES	NAS 9-10835	Kales, A.	52	1477
JSC	Beckman, E. L.	UNIV CALIF-L ANGELES	NAS 9-10835	Kales, A.	52	1477
JSC	Homick, J. L.	UNIV CALIF-L ANGELES	NAS 9-11907	Markham, C. H.	59	1478
JSC	Lafferty, P. E.	UNIV CALIF-L ANGELES	NAS 9-12236	Coleman, P. J., Jr.	11	1479
JSC	Hardee, S. N.	UNIV CALIF-L ANGELES	NAS 9-12757	Kaula, W. M.	13	1480
JSC	Harris, J. W.	UNIV CALIF-L ANGELES	NGL 05-007-287	Wetherill, G. W.	13	1490
JSC	Harris, J. W.	UNIV CALIF-L ANGELES	NGL 05-007-330	Anderson, O. L.	13	1491
JSC	Harris, J. W.	UNIV CALIF-L ANGELES	NGL 05-007-367	Wasson, J. T.	12	1493
JSC	Harris, J. W.	UNIV CALIF-L ANGELES	NGR 05-007-289	Kaplan, I. R.	13	1501
JSC	Harris, J. W.	UNIV CALIF-L ANGELES	NGR 05-007-291	Wasson, J.	13	1502
JSC	Harris, J. W.	UNIV CALIF-L ANGELES	NGR 05-007-292	Schopf, J. W.	32	1503
JSC	Harris, J. W.	UNIV CALIF-L ANGELES	NGR 05-007-345	Libby, W. F.	32	1512
JSC		UNIV CALIF-SAN DIEGO	NAS 9-10670	Arnold, J. R.	39	1534
JSC	Lafferty, P.	UNIV CALIF-SAN DIEGO	NGL 05-009-148	Arnold, J. R.	12	1545
JSC	Harris, J. W.	UNIV CALIF-SAN DIEGO	NGL 05-009-150	Marti, K.	12	1546
JSC	Harris, J. W.	UNIV CALIF-SAN DIEGO	NGL 05-009-154	Arrhenius, G. O.	13	1547
JSC	Harris, J. W.	UNIV CALIF-SAN DIEGO	NGR 05-009-152	Engel, A. E.	12	1557
JSC	Harris, J. W.	UNIV CALIF-SAN DIEGO	NGR 05-025-007	Earley, L. E.	52	1572
JSC	Jackson, M. M.	UNIV CALIF-SAN FRAN	NGR 05-025-007	Earley, L. E.	52	1572
JSC	Hoffler, G. W.	UNIV CALIF-SAN FRAN	NGR 05-010-081	Tilton, G. R.	32	1579
JSC	Harris, J. W.	UNIV CALIF-S BARBARA			39	1915
JSC	Harris, J. W.	UNIV OF CHICAGO	NAS 9-7887	Anders, E.		
JSC	Parker, R. A.	UNIV OF CHICAGO	NAS 9-11691	O'Dell, C. R.	11	1916
JSC	Bonner, G. P.	UNIV OF CHICAGO	NAS 9-11691	O'Dell, C. R.	11	1916
JSC	Harris, J. W.	UNIV OF CHICAGO	NGL 14-001-167	Anders, E.	13	1924
JSC	Harris, J. W.	UNIV OF CHICAGO	NGL 14-001-169	Clayton, R. N.	12	1925
JSC	Harris, J. W.	UNIV OF CHICAGO	NGL 14-001-171	Smith, J. V.	13	1926
JSC	Harris, J. W.	UNIV OF CHICAGO	NGR 14-001-166	Fernandez-Moran, H.	13	1933
JSC	Harris, J. W.	UNIV OF CHICAGO	NGR 14-001-173	Hafner, S. S.	13	1934
JSC	Harris, J. W.	UNIV COLORADO-BOLDR	NGR 06-003-181	Larson, E. E.	13	1667
JSC	Mieszkuc, B. J.	UNIV OF CONNECTICUT	NAS 9-10844	Kenyon, A. J.	59	1694
JSC	McQueen, J. L.	UNIV OF CONNECTICUT	NAS 9-10844	Kenyon, A. J.	59	1694
JSC	Alexander, W. C.	UNIV OF CONNECTICUT	NAS 9-11575	Kenyon, A. J.	59	1695
JSC	Holland, J. M.	UNIV OF CONNECTICUT	NAS 9-11575	Kenyon, A. J.	59	1695
JSC	Mieszkuc, B. J.	UNIV OF CONNECTICUT	NAS 9-11941	Kenyon, A. J.	59	1696
JSC	Byrns, Z.	UNIV OF DELAWARE	NAS 9-13344	Szekielda, K.	33	1727
JSC	Harris, J. W.	UNIV OF DELAWARE	NGR 08-001-029	Glass, B. P.	13	1729
JSC	Kondo, Y.	UNIV OF FLORIDA	NAS 9-11436		11	1791
JSC	Grimwood, J. M.	UNIV OF HOUSTON	NAS 9-9104	Swenson, L. S.	73	3285
JSC	Moorehead, R. W.	UNIV OF HOUSTON	NAS 9-9270	Shehadeh, N. M.	45	3286
JSC	Eggers, D. S.	UNIV OF HOUSTON	NAS 9-9851	Hayre, H. S.	45	3287
JSC	Walkinshaw, C. H.	UNIV OF HOUSTON	NAS 9-10947	Venkateswaran, S.	53	3288
JSC	Wooley, B. C.	UNIV OF HOUSTON	NAS 9-10947	Venkateswaran, S.	53	3288
JSC	Huntoon, H. H.	UNIV OF HOUSTON	NAS 9-11276	Zuckerman, J. V.	99	3289
JSC	Heidelbaugh, N. D.	UNIV OF HOUSTON	NAS 9-11676	Cox, J. E.	59	3290
JSC	Arndt, G. D.	UNIV OF HOUSTON	NAS 9-11845	Simpson, R. S.	45	3291
JSC	Jackson, J. T.	UNIV OF HOUSTON	NAS 9-11885	Sheer, D. H.	53	3292
JSC	Schneider, H. J.	UNIV OF HOUSTON	NAS 9-12093	Zlatkis, A.	52	3293
JSC	Cotton, P.	UNIV OF HOUSTON	NAS 9-12217	Zuckerman, J. V.	99	3294
JSC	Amesbury, D. A.	UNIV OF HOUSTON	NAS 9-12646	Graff, W. J.	44	3295
JSC	Erb, R. B.	UNIV OF HOUSTON	NAS 9-12646	Graff, W. J.	44	3295
JSC	Buckel, C. A.	UNIV OF HOUSTON	NAS 9-12650	Holland, W. E.	79	3296

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JSC	Hudson, R. O.	UNIV OF HOUSTON	NAS 9-12650	Holland, W. E.	79	3296
JSC	Henize, K. G.	UNIV OF HOUSTON	NAS 9-12692	Eisner, M. E.	59	3297
JSC	Baker, K.	UNIV OF HOUSTON	NAS 9-12777	Decell, H.	21	3298
JSC	Schneider, H. J.	UNIV OF HOUSTON	NAS 9-13068	Zlatkis, A.	52	3299
JSC	Chassey, C. E.	UNIV OF HOUSTON	NAS 9-13134	Gupta, V. D.	53	3300
JSC	Walkinshaw, C. H.	UNIV OF HOUSTON	NAS 9-13262	Venketeswaran, S.	51	3301
JSC	Taylor, G. R.	UNIV OF HOUSTON	NAS 9-13306	Clark, W. H., Jr.	51	3302
JSC	Schneider, H. J.	UNIV OF HOUSTON	NAS 9-13457	Zlatkis, A.	52	3303
JSC	White, T. T.	UNIV OF HOUSTON	NAS 9-13462	Hayre, H. S.	19	3304
JSC	Robbins, D. E.	UNIV OF HOUSTON	NGL 44-005-041	Goodman, C.	11	3306
JSC	Eandi, B. K.	UNIV OF HOUSTON	NGL 44-005-090	Huang, C. J.	49	3307
JSC	Harris, J. W.	UNIV OF HOUSTON	NGL 44-005-184	King, E. A.	32	3308
JSC	Glynn, P. C.	UNIV OF HOUSTON	NGR 44-005-120	Michalopoulos, C. D.	21	3311
JSC	Harris, J. W.	UNIV OF HOUSTON	NGR 44-005-125	Oro, J.	12	3312
JSC	Harris, J. W.	UNIV OF HOUSTON	NGR 44-005-127	Oro, J.	13	3313
JSC	Bonner, G.	UNIV OF HOUSTON	NGR 44-005-137	Hildebrandt, A. F.	13	3316
JSC	Strangway, D. W.	UNIV OF HOUSTON	NGR 44-005-162	Vant Hull, L. L.	13	3317
JSC	Cour Palais, B.	UNIV OF HOUSTON	NGR 44-005-181	Eisner, M.	11	3318
JSC	Phinney, W. C.	UNIV OF HOUSTON	NGR 44-005-181	Eisner, M.	11	3318
JSC	Scott, W.	UNIV OF IDAHO	NAS 9-12078	Stewart, R.	13	1882
JSC	Morrison, D. A.	UNIV OF IDAHO	NGR 13-001-008	Reid, R. R.	32	1883
JSC	Kimzey, S. L.	UNIV ILLINOIS-CHICGO	NGR 14-012-026	Guttman, H. N.	53	1949
JSC	Hill, R. O.	UNIV ILLINOIS-URBANA	NAS 9-12446	Wong, K. W.	19	1951
JSC	Bender, M. J.	UNIV ILLINOIS-URBANA	NAS 9-12459	Karara, H. M.	44	1952
JSC	Miller, M.	UNIV OF IOWA	NAS 9-13313	Hoppin, R. A.	32	2040
JSC	Potter, A. E.	UNIV OF KANSAS	NAS 9-10261	Moore, R. K.	45	2051
JSC	Eichelman, W. F.	UNIV OF KANSAS	NAS 9-12061	Moore, R. K.	31	2052
JSC	White, T. J.	UNIV OF KANSAS	NAS 9-13271	Yarger, H. L.	19	2053
JSC	Kirby, R.	UNIV OF KANSAS	NAS 9-13273	Eagleman, J. R.	19	2054
JSC	White, T. T.	UNIV OF KANSAS	NAS 9-13331	Moore, R. K.	19	2055
JSC	Dell, M. E.	UNIV OF KANSAS	NAS 9-13347	Moore, R. K.	49	2056
JSC	Howard, C. E.	UNIV OF KANSAS	NAS 9-13347	Moore, R. K.	49	2056
JSC	Hoffler, G. W.	UNIV OF KENTUCKY	NAS 9-12749	Carter, W. M.	46	2072
JSC	Harris, J. W.	UNIV OF KENTUCKY	NGR 18-001-058	Ehmann, W. D.	13	2076
JSC	Harris, J. W.	UNIV OF KENTUCKY	NGR 18-001-060	Birkebah, R. C.	13	2077
JSC	Eichelman, W. F.	UNIV MARYLAND-COL PK	NAS 9-5886	Weber, J.	19	2149
JSC	Harris, J. W.	UNIV MARYLAND-COL PK	NGR 21-002-329	Ponnamperuma, C.	12	2183
JSC	Harris, J. W.	UNIV OF MASS-AMHERST	NGL 22-010-089	Haggerty, S. E.	13	2400
JSC	Harris, J. W.	UNIV OF MIAMI	NGR 10-007-088	Fox, S. W.	12	1812
JSC	Leach, C. S.	UNIV OF MIAMI	NGR 10-007-097	Epstein, M.	52	1814
JSC	Johnson, I. L.	UNIV MICH-ANN ARBOR	NAS 9-12872	Powers, W. F.	99	2447
JSC	Eandi, B. K.	UNIV MICH-ANN ARBOR	NGR 23-005-559	Stolarski, R. S.	31	2476
JSC	Trichel, M. C.	U MINN-MNPLS-ST PAUL	NAS 9-11367	Kellogg, P. J.	31	2503
JSC	Rummel, J. A.	U MINN-MNPLS-ST PAUL	NAS 9-12338	Halberg, F.	59	2504
JSC	Heidelbaugh, N. D.	U MINN-MNPLS-ST PAUL	NAS 9-12560	Labuza, T. P.	59	2505
JSC	Rummel, J. A.	U MINN-MNPLS-ST PAUL	NAS 9-13405	Halberg, F.	51	2506
JSC	Harris, J. W.	U MINN-MNPLS-ST PAUL	NGL 24-005-225	Pepin, R. O.	13	2510
JSC	Harris, J. W.	U MINN-MNPLS-ST PAUL	NGR 24-005-223	Murthy, V. R.	13	2518
JSC	Hudson, R. D.	U MINN-MNPLS-ST PAUL	NGR 24-005-231	Nier, A. O.	31	2519
JSC	Harris, J. W.	U MINN-MNPLS-ST PAUL	NGR 24-005-248	Banerjee, S. K.	32	2520
JSC	Rummel, J. A.	UNIV MISS-MEDL CNTR	NGR 25-002-018	Milhorn, H. T., Jr.	53	2544
JSC	Waligora, J.	UNIV MISS-MEDL CNTR	NGR 25-002-018	Milhorn, H. T., Jr.	53	2544
JSC	Alexander, W. A.	UNIV MO-COLUMBIA	NAS 9-9209	Mengel, C. E.	59	2552
JSC	Kimzey, S. L.	UNIV MO-COLUMBIA	NAS 9-9209	Mengel, C. E.	59	2552
JSC	Rambaut, P. C.	UNIV MO-COLUMBIA	NAS 9-10955	Luckey, T. D.	59	2553
JSC	Rambaut, P. C.	UNIV MO-COLUMBIA	NAS 9-12369	Rambaut, P. C.	59	2554
JSC	Ellis, W. E.	UNIV MO-COLUMBIA	NAS 9-12526	Winnick, J.	43	2555
JSC	Dawson, C. T.	UNIV MO-COLUMBIA	NAS 9-13436	Tranter, W. H.	21	2556

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JSC	Eandi, B. K.	UNIV MO-COLUMBIA	NGR 26-004-098	Winnick, J.	46	2561
JSC	Rummel, J. A.	UNIV MO-KANSAS CITY	NGR 26-001-016	Bryant, P. J.	53	2566
JSC	Harris, J. W.	UNIV MO-ROLLA	NGR 26-003-057	Manuel, O. K.	12	2570
JSC	Heidelbaugh, N. D.	UNIV NEBRASKA-LINCLN	NAS 9-11045	Hartung, T. E.	59	2592
JSC	Rambaut, P. C.	UNIV NEBRASKA-LINCLN	NAS 9-11045	Hartung, T. E.	59	2592
JSC	Amsbury, D. L.	UNIV OF NEVADA-RENO	NAS 9-7779	Quade, J.	39	2598
JSC	Miller, M.	UNIV OF NEVADA-RENO	NAS 9-13274	Quade, J.	32	2599
JSC	Brockett, R. M.	UNIV OF NEW MEXICO	NAS 9-12720	Gardner, R. L.	52	2696
JSC	Harris, J. W.	UNIV OF NEW MEXICO	NGL 32-004-063	Keil, K.	12	2701
JSC	Harris, J. W.	UNIV N CAR-CHPL HILL	NGR 34-003-048	Isenhour, T. L.	12	2922
JSC	Pitts, D. E.	UNIV OKLAHOMA-NORMAN	NAS 9-13360	Sasaki, Y.	31	3008
JSC	Strangway, D. W.	UNIV OREGON-EUGENE	NAS 9-9690	Blank, H. R.	32	3023
JSC	Harris, J. W.	UNIV OREGON-EUGENE	NGL 38-003-022	Weill, D. F.	13	3025
JSC	Harris, J. W.	UNIV OREGON-EUGENE	NGL 38-003-024	Goles, G. G.	12	3026
JSC	Michel, E. L.	UNIV OF PENNSYLVANIA	NGL 39-010-097	Lambertsen, C. J.	53	3101
JSC	Harris, J. W.	UNIV OF PITTSBURGH	NGR 39-011-129	Fuller, M.	13	3111
JSC	Harris, J. W.	UNIV OF PITTSBURGH	NGR 39-011-138	Cohen, A. J.	12	3113
JSC	Bailey, J. V.	UNIV SAN FRANCISCO	NAS 9-12466	Benton, E. V.	13	1586
JSC		UNIV OF SOUTHERN CAL	NAS 9-6164		13	1604
JSC	Jackson, M. M.	UNIV OF SOUTHERN CAL	NGR 05-018-122	Meehan, J. P.	51	1610
JSC	Moseley, E. C.	U TEX CANCER CENTER	NAS 9-7153	Mitchell, B. A., Jr.	52	3354
JSC	Benson, R. E.	U TEX CANCER CENTER	NAS 9-11117	Jahns, M. F.	53	3355
JSC	Barnes, C. M.	U TEX CANCER CENTER	NAS 9-11117	Jahns, M. F.	53	3355
JSC	Waligora, J. M.	U TEX CANCER CENTER	NAS 9-11119	Mitchell, B. A., Jr.	59	3356
JSC	Rummel, J. A.	U TEX CANCER CENTER	NAS 9-11119	Mitchell, B. A., Jr.	59	3356
JSC	Moseley, E. C.	U TEX CANCER CENTER	NAS 9-13042	Mitchell, B. A., Jr.	61	3357
JSC	Goodrich, W. D.	UNIV TEXAS-AUSTIN	NAS 9-10976	Bertin, J. J.	41	3325
JSC	Goodrich, W. D.	UNIV TEXAS-AUSTIN	NAS 9-11082	Bertin, J. J.	46	3326
JSC	Potter, A. E.	UNIV TEXAS-AUSTIN	NAS 9-11419	Smith, H. J.	11	3327
JSC	Potter, A. E.	UNIV TEXAS-AUSTIN	NAS 9-12568	Barnes, P. G.	13	3328
JSC	Dornbach, J. E.	UNIV TEXAS-AUSTIN	NAS 9-12919	Brown, L. F.	32	3329
JSC	Dornbach, J.	UNIV TEXAS-AUSTIN	NAS 9-12949		72	3330
JSC	Mansur, S. R.	UNIV TEXAS-AUSTIN	NAS 9-13176	Henize, K. G.	11	3331
JSC	Miller, M.	UNIV TEXAS-AUSTIN	NAS 9-13312	Baker, V. R.	32	3332
JSC	Eandi, B. K.	UNIV TEXAS-AUSTIN	NGL 44-012-133		49	3338
JSC	Youngblood, J. L.	UNIV TEXAS-AUSTIN	NGL 44-012-133		49	3338
JSC	Fedderson, W. E.	UNIV TEXAS-AUSTIN	NGR 44-012-224	Helmreich, A. L.	69	3347
JSC	Eichelman, W. F.	UNIV TEXAS-DALLAS	NAS 9-5964	Johnson, J. S.	19	3368
JSC	Eichelman, W. F.	UNIV TEXAS-DALLAS	NAS 9-10410	Hoffman, J. H.	13	3369
JSC	Eichelman, W. F.	UNIV TEXAS-DALLAS	NAS 9-12074	Hoffman, J. H.	19	3370
JSC	Baker, M. F.	UNIV TEXAS-DALLAS	NAS 9-12999	Hoffman, J. H.	39	3371
JSC	Dell, M. E.	UNIV TEXAS-DALLAS	NAS 9-12999	Hoffman, J. H.	39	3371
JSC	Baker, K.	UNIV TEXAS-DALLAS	NAS 9-13512	Odell, P. L.	21	3372
JSC	Harris, J. W.	UNIV TEXAS-DALLAS	NGR 44-004-116	Carter, J. L.	13	3377
JSC	Harris, J. W.	UNIV TEXAS-DALLAS	NGR 44-004-117	Helsley, C. E.	12	3378
JSC	Buchanan, P.	UNIV TEX-DENTAL BRCH	NAS 9-10566	Shannon, I. L.	51	3385
JSC	Buchanan, P.	UNIV TEX-DENTAL BRCH	NAS 9-11118	Brown, L. R.	51	3386
JSC	Frome, W. J.	UNIV TEX-DENTAL BRCH	NAS 9-11118	Brown, L. R.	51	3386
JSC	Leach, C. S.	UNIV TEX-DENTAL BRCH	NGR 44-090-001	Hampton, J. K., Jr.	52	3387
JSC	Alexander, W. C.	UNIV TEX-DENTAL BRCH	NGR 44-090-001	Hampton, J. K., Jr.	52	3387
JSC	Kimzey, S. L.	UNIV TEXAS-GALVESTON	NAS 9-11088	Ritzmann, S. E.	52	3389
JSC	Kimzey, S. L.	UNIV TEXAS-GALVESTON	NAS 9-11088	Ritzmann, S. E.	52	3389
JSC	Leach, C.	UNIV TEXAS-GALVESTON	NAS 9-12296	Ritzmann, S. E.	52	3390
JSC	Kimzey, S. L.	UNIV TEXAS-GALVESTON	NAS 9-13102	Lockhart, L. H.	53	3391
JSC	Eichelman, W. F.	UNIV TEXAS-GALVESTON	NAS 9-13143	Latham, G. V.	13	3392
JSC	Leach, C.	U TEX HEALTH CTR-SA	NGR 44-094-001	Morgan, W. W.	51	3397
JSC	Jackson, M.	U TEX HEALTH CTR-SA	NGR 44-094-003	Earley, L. E.	53	3398
JSC	Wooley, B. C.	UNIV TEX-PUB HEALTH	NAS 9-11384	Eitzen, H. E.	59	3399

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	A N
JSC	Fuller, C. E.	UNIV TEX-PUB HEALTH	NAS 9-11522	Scanlon, J. E.	53	340
JSC	Heidelbaugh, N. D.	UNIV TEX-PUB HEALTH	NAS 9-11701	Chambers, L. A.	59	340
JSC	Fuller, C. E.	UNIV TEX-PUB HEALTH	NAS 9-12040	Davis, E. M.	39	340
JSC	Fuller, C. E.	UNIV TEX-PUB HEALTH	NAS 9-12041	Severs, R. K.	39	340
JSC	Schneider, H. J.	UNIV TEX-PUB HEALTH	NAS 9-12640	Labarthe, D. R.	53	340
JSC	Fuller, C. E.	UNIV TEX-PUB HEALTH	NAS 9-12696	Scallion, J. E.	53	340
JSC	Barnes, C. M.	UNIV TEX-PUB HEALTH	NAS 9-12696	Scallion, J. E.	53	340
JSC	McQueen, J. L.	UNIV TEX-PUB HEALTH	NAS 9-12783	Downs, J. D.	53	340
JSC	Fuller, C. E.	UNIV TEX-PUB HEALTH	NAS 9-12823	Rush, M. N.	53	340
JSC	Eandi, B. K.	UNIV TEX-PUB HEALTH	NGR 44-084-002	Chen, C. T.	39	340
JSC	Hoffler, G. W.	U TEX HEALTH CTR-DAL	NGR 44-012-151	Mitchell, J. H.	53	335
JSC	Harris, J. W.	UNIV OF TULSA	NGR 37-008-002	Barker, C.	12	300
JSC	Lafferty, P.	UNIV OF UTAH	NAS 9-11475	Ward, S. H.	31	341
JSC	Lafferty, P. E.	UNIV OF UTAH	NAS 9-12168	Ward, S. H.	32	341
JSC	Miller, M. L.	UNIV OF UTAH	NAS 9-13322	Jensen, M. L.	32	341
JSC	Harris, J. W.	UNIV OF UTAH	NGR 45-003-090	Ward, S. H.	32	342
JSC	Foreman, R. G.	UNIV OF UTAH	NGR 45-003-093	Folias, E. S.	21	342
JSC	Hardee, S. N.	UNIV OF VIRGINIA	NAS 9-12752	Junkins, J. L.	13	346
JSC	Rambaut, P. C.	UNIV OF WASHINGTON	NAS 9-13029	Nelp, W. B.	59	353
JSC	Jackson, M. M.	UNIV OF WASHINGTON	NGR 48-002-082	Powell, L. B.	59	353
JSC	Jackson, M. M.	UNIV OF WASHINGTON	NGR 48-002-135	Scher, A. M.	51	354
JSC	Harris, J. W.	UNIV OF WASHINGTON	NGR 48-002-149	Ghose, S.	13	355
JSC	Fuller, C. E.	UNIV OF WEST FLORIDA	NAS 9-11872	Edmisten, J. A.	53	181
JSC	Barnes, C. M.	UNIV OF WEST FLORIDA	NAS 9-11872	Edmisten, J. A.	53	181
JSC	Horrigan, D. J.	UNIV WISC-GREEN BAY	NGR 50-008-001	Kaufman, W. C.	51	356
JSC	Waligora, J. M.	UNIV WISC-GREEN BAY	NGR 50-008-001	Kaufman, W. C.	51	356
JSC	Rambaut, P. C.	UNIV WISC-MADISON	NAS 9-12306	Cameron, J. R.	59	357
JSC	Harris, J. W.	UNIV WISC-MADISON	NGL 50-002-148	Haskin, L. A.	12	358
JSC	Holmes, Q. A.	UNIV WISC-MILWAUKEE	NAS 9-12931	Northouse, R. A.	19	359
JSC	Miller, M. L.	UNIV OF WYOMING	NAS 9-13298	Houston, R. S.	32	360
JSC	Hoffler, G. W.	VANDERBILT UNIVERSITY	NAS 9-12889	Smith, R. F.	59	318
JSC	Rummel, J. A.	VIRGINIA COMNWLTH U	NGR 47-002-038	Patterson, J. L.	53	349
JSC	McQueen, J. L.	VIRGINIA POLY INST	NAS 9-12601	Moore, W. E.	53	349
JSC	Curry, D. M.	VIRGINIA POLY INST	NAS 9-12630	Lewis, C. H.	41	350
JSC	Alexander, W. C.	WAKE FOREST UNIV	NAS 9-11690	Hutchins, P. M.	52	292
JSC	Leach, C. S.	WAKE FOREST UNIV	NAS 9-11690	Hutchins, P. M.	52	292
JSC	Eichelman, W. F.	WASHINGTON UNIVERSITY	NAS 9-11895	Walker, R. M.	31	2577
JSC	Harris, J. W.	WASHINGTON UNIVERSITY	NGL 26-008-065	Walker, R. M.	13	2580
JSC	Rambaut, P. C.	WASHINGTON UNIVERSITY	NSR 26-008-036	Ballinger, W. F.	53	2584
JSC	Eichelman, W. F.	WESLEYAN UNIVERSITY	NAS 9-11025	Faller, J. E.	13	1701
JSC	Kondo, Y.	WESLEYAN UNIVERSITY	NGR 07-006-006	Page, T.	11	1703
JSC		WOODSHOLE OCEAN INST	NAS 9-12563		32	2400
JSC		WOODSHOLE OCEAN INST	NAS 9-12564		32	2407
JSC	Scott, C. D.	YALE UNIVERSITY	NAS 9-13058	Rosner, D. E.	43	1706
JSC		YALE UNIVERSITY	NGR 07-004-039	Clark, S. P.	32	1715
JSC	Harris, J. W.	YALE UNIVERSITY	NGR 07-004-134	Skinner, B. J.	12	1717
KSC	Norman, R. L.	BETHUNE-COOKMAN COL	NGR 10-022-001	Poonai, P.	39	1777
KSC	Gayle, J. B.	FLORIDA INST OF TECH	NGR 10-015-008	Nevin, T. A.	39	1778
KSC	Lee, W. H.	FLORIDA INST OF TECH	NGR 10-015-008	Nevin, T. A.	39	1778
KSC	Lee, W. H.	FLORIDA TECH UNIV	NGR 10-019-004	Miller, H. A.	39	1785
KSC	Gayle, J. B.	FLORIDA TECH UNIV	NGR 10-019-004	Miller, H. A.	39	1785
KSC	Gayle, J. B., Jr.	FLORIDA TECH UNIV	NGR 10-019-009	Nimmo, B. G.	39	1786
KSC	Lee, W. H.	FLORIDA TECH UNIV	NGR 10-019-009	Nimmo, B. G.	39	1786
KSC	Wright, M. I.	GEORGIA INST OF TECH	NAS10-8375	Webb, R. P.	45	1839
KSC	Boggs, W. H.	GEORGIA INST OF TECH	NAS10-8375	Webb, R. P.	45	1839
KSC	MacKey, A. J.	NEW MEX ST U-LAS CR	NAS10-7399	Bumgarner, R. A.	45	2689
KSC	Schlimmer, G. E.	NEW MEX ST U-LAS CR	NAS10-7399	Bumgarner, R. A.	45	2689
KSC	Deese, J. H.	UNIV OF FLORIDA	NAS10-1255	Farber, E. A.	49	1792

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ASC	Atkins, J. R.	UNIV OF FLORIDA	NAS10-1255	Farber, E. A.	49	1792
ASC	Hawkins, G. M.	UNIV OF FLORIDA	NAS10-7791	Lomask, M.	73	1793
KSC	Russo, J. F.	UNIV OF FLORIDA	NAS10-7791	Lomask, M.	73	1793
ASC	Jorolan, A. E.	UNIV OF FLORIDA	NAS10-8051	Farber, E. A.	49	1794
KSC	Toft, P. D.	UNIV OF FLORIDA	NGR 10-005-169	Uman, M. A.	31	1804
KSC	Carraway, A. J.	UNIV OF FLORIDA	NGR 10-005-169	Uman, M. A.	31	1804
WTR	Boggs, W. H.	UNIV OF SO CAROLINA	NAS10-8354	Bonnell, R. D.	43	3142
WTR	Jorolan, A. E.	UNIV OF SO CAROLINA	NAS10-8354	Bonnell, R. D.	43	3142
LARC	Long, E. R., Jr.	AMERICAN UNIVERSITY	NGR 09-003-014	Cullen, E.	45	1733
LARC	Yates, E. C., Jr.	BOSTON UNIVERSITY	NGR 22-004-030	Murino, L.	41	2213
LARC	Lester, H. C.	BOSTON UNIVERSITY	NGR 22-004-030	Murino, L.	41	2213
LARC	Soffen, G. A.	BROWN UNIVERSITY	NAS 1-9680	Mutch, T. A.	31	3121
LARC	Meador, W. E., Jr.	BROWN UNIVERSITY	NGL 40-002-059	Mason, E. A.	12	3124
LARC	Conway, E. J.	BROWN UNIVERSITY	NGR 40-002-093	Loferski, J. J.	13	3127
LARC	Walker, G. H.	BROWN UNIVERSITY	NGR 40-002-093	Loferski, J. J.	13	3127
LARC	Soffen, G. A.	CALIF INST OF TECH	NAS 1-9703	Anderson, D. L.	32	1176
LARC		CALIF INST OF TECH	NAS 1-12311		39	1177
LARC	Kenimer	CALIF INST OF TECH	NGL 05-002-100	Nicolett, M. A.	11	1200
LARC		CALIF INST OF TECH	NGR 05-002-220	Liepmann, H. W.	13	1222
LARC	Hubbard, H.	CALIF INST OF TECH	NGR 05-002-220	Liepmann, H. W.	13	1222
LARC	McComb, H. M.	CARNEGIE-MELLON UNIV	NGL 39-002-023	Swedlow, J. L.	46	3035
LARC	Walker, G. H.	CARNEGIE-MELLON UNIV	NGR 39-087-021	Milnes, A. G.	13	3038
LARC	Conway, E. J.	CARNEGIE-MELLON UNIV	NGR 39-087-021	Milnes, A. G.	13	3038
LARC	Stroud, W. J.	CASE WESTERN RESERVE	NGL 36-003-002	Kicher, T. P.	41	2929
LARC	Jewel, J. W., Jr.	CHRISTPHR NEWPRT COL	NAS 1-12152	McMurrin, R. E.	41	3429
LARC	Morris, G. J.	CHRISTPHR NEWPRT COL	NAS 1-12152	McMurrin, R. E.	41	3429
LARC	Moul, M. T.	CITY COLLEGE OF N Y	NGR 33-013-053	Mekel, R.	99	2714
LARC	Adams, J. J.	CITY COLLEGE OF N Y	NGR 33-013-053	Mekel, R.	99	2714
LARC	Stroud, W. J.	CLARKSON COL OF TECH	NGL 33-007-075	Thornton, W. A.	41	2716
LARC	Hall, J. B., Jr.	CLEMSON UNIV-CLEMSON	NAS 1-11297	Hestor, J. C.	39	3134
LARC	Ballard, T. B.	CLEMSON UNIV-CLEMSON	NGR 41-001-024	Snelsire, R. W.	21	3136
LARC	Murray, N. D.	CLEMSON UNIV-CLEMSON	NGR 41-001-024	Snelsire, R. W.	21	3136
LARC	Doggett, R. V., Jr.	CLEMSON UNIV-CLEMSON	NGR 41-001-027	Rudisill, C. S.	41	3137
LARC	Yeager, P. R.	COLLEGE OF WM & MARY	NAS 1-9461	Harcum, E. R.	33	3430
LARC	Hunter, W. H.	COLLEGE OF WM & MARY	NAS 1-9461	Harcum, E. R.	33	3430
LARC	Beck, S. M.	COLLEGE OF WM & MARY	NAS 1-11808	Remler, E. A.	13	3431
LARC	Wilson, J. W.	COLLEGE OF WM & MARY	NAS 1-11808	Remler, E. A.	13	3431
LARC	Martin, D. J.	COLLEGE OF WM & MARY	NGL 47-006-055	Sher, A.	99	3432
LARC	Martin, D. J.	COLLEGE OF WM & MARY	NGL 47-006-058	Sher, A.	19	3433
LARC	Smith, D. D.	COLLEGE OF WM & MARY	NGR 47-006-010	Funsten, H. O.	13	3434
LARC	Fales, C. L.	COLLEGE OF WM & MARY	NGR 47-006-050	Soest, J. F.	13	3435
LARC	Sweet, G. E.	COLORADO STATE UNIV	NAS 1-12106	Vonder Haar, T. H.	31	1624
LARC	Woerner, C. V.	COLORADO STATE UNIV	NAS 1-12106	Vonder Haar, T. H.	31	1624
LARC	Carlson, H. W.	COLUMBIA UNIVERSITY	NGL 33-008-098	Friedman, M. B.	41	2730
LARC		COLUMBIA UNIVERSITY	NGL 33-008-098	Friedman, M. B.	41	2730
LARC	Edge, P. M., Jr.	COLUMBIA UNIVERSITY	NGL 33-008-118	Borsky, P. N.	62	2731
LARC	Cawthorn, J. M.	COLUMBIA UNIVERSITY	NGL 33-008-118	Borsky, P. N.	62	2731
LARC	Soffen, G. A.	CORNELL UNIVERSITY	NAS 1-9683	Sagan, C.	13	2743
LARC		CORNELL UNIVERSITY	NGL 33-010-054	Seebass, A. R.	13	2758
LARC	Carlson, H.	CORNELL UNIVERSITY	NGL 33-010-054	Seebass, A. R.	13	2758
LARC	Allario, F.	CORNELL UNIVERSITY	NGL 33-010-064	Cool, T. A.	13	2759
LARC	Fulton, R. E.	CORNELL UNIVERSITY	NGL 33-010-070	Gallagher, R. H.	41	2760
LARC	Sweet, G. E.	DREXEL UNIVERSITY	NAS 1-11871	House, F. B.	31	3044
LARC	Long, W. C.	DREXEL UNIVERSITY	NGR 39-004-038	Matcovich, T. J.	49	3046
LARC	Pitts, F. L.	DREXEL UNIVERSITY	NGR 39-004-038	Matcovich, T. J.	49	3046
LARC	Thomson, R. G.	DREXEL UNIVERSITY	NGR 39-004-041	Mortimer, R. W.	46	3047
LARC	Soffen, G. A.	FLORIDA STATE UNIV	NAS 1-9693	Hess, S. K.	31	1779
LARC	Martin, D. J.	GEORGE WASHINGTON U	NGL 09-010-053	Liebowitz, H.	47	1754

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LARC	Royall, J. F.	GEORGE WASHINGTON U	NGL 09-010-053	Liebowitz, H.	47	1754
LARC	Phillips, E. P.	GEORGE WASHINGTON U	NGR 09-010-058	Freudenthal, A. M.	41	1755
LARC	Leybold, H. A.	GEORGE WASHINGTON U	NGR 09-010-058	Freudenthal, A. M.	41	1755
LARC	Shearin, J. G.	GEORGE WASHINGTON U	NGR 09-010-064	Liebowitz, H.	41	1756
LARC	Hubbard, H. H.	GEORGE WASHINGTON U	NGR 09-010-064	Liebowitz, H.	41	1756
LARC	Mulac, R. W.	GEORGE WASHINGTON U	NGR 09-010-074	Liebowitz, H.	41	1757
LARC	Fulton, R. E.	GEORGE WASHINGTON U	NGR 09-010-078	Liebowitz, H.	41	1758
LARC	Stephens, W. B.	GEORGE WASHINGTON U	NGR 09-010-078	Liebowitz, H.	41	1758
LARC	Hubbard, H. H.	GEORGE WASHINGTON U	NGR 09-010-085	Liebowitz, H.	41	1760
LARC	Gilreath, M. C.	GEORGIA INST OF TECH	NAS 1-11267	Bomar, S. H., Jr.	45	1825
LARC	Croswell, W. F.	GEORGIA INST OF TECH	NAS 1-11267	Bomar, S. H., Jr.	45	1825
LARC	Peterson, J. P.	GEORGIA INST OF TECH	NGL 11-002-096	Horton, W. H.	41	1844
LARC	Evans, J. S.	GEORGIA INST OF TECH	NGR 11-002-157	Huang, A. B.	41	1849
LARC	Anderson, G. Y.	GEORGIA INST OF TECH	NGR 11-002-157	Huang, A. B.	41	1849
LARC	Michaels, T. S.	GEORGIA INST OF TECH	NGR 11-002-158	Tapia, M. A.	45	1850
LARC	Eskew, M. H.	GEORGIA INST OF TECH	NGR 11-002-158	Tapia, M. A.	45	1850
LARC	Bushnell, D. M.	GEORGIA INST OF TECH	NGR 11-002-159	Huang, A. B.	41	1851
LARC	Harris, J. E.	GEORGIA INST OF TECH	NGR 11-002-159	Huang, A. B.	41	1851
LARC	Davidson, J. R., Jr.	GEORGIA INST OF TECH	NGR 11-002-169	Hanagud, S. V.	21	1853
LARC	Leybold, H. A.	GEORGIA INST OF TECH	NGR 11-002-169	Hanagud, S. V.	21	1853
LARC	Boatright, W. B.	GEORGIA INST OF TECH	NGR 11-002-177	Bangert, L. H.	41	1854
LARC	Anderson, G. Y.	GEORGIA INST OF TECH	NGR 11-002-177	Bangert, L. H.	41	1854
LARC	Jewel, J. W.	HAMPTON INSTITUTE	NAS 1-4815		41	3438
LARC	Jewel, J. W., Jr.	HAMPTON INSTITUTE	NAS 1-10898		41	3439
LARC	Martin, D. J.	HAMPTON INSTITUTE	NGR 47-020-003	Horton, L.	39	3440
LARC	Soffen, G. A.	HARVARD UNIVERSITY	NAS 1-10492	McElroy, M. B.	31	2217
LARC	McComb, Jr., H. G.	HARVARD UNIVERSITY	NGL 22-007-012	Budiansky, B.	46	2223
LARC	Stephens, W. B.	HARVARD UNIVERSITY	NGL 22-007-012	Budiansky, B.	46	2223
LARC	Swift, C. T.	HOFSTRA UNIVERSITY	NGR 33-209-002	Weissman, R. S.	45	2796
LARC	Diaz, A. V.	INDIANA U-BLOOMINGTN	NAS 1-12055	Hayes, J. M.	13	1973
LARC	Cawthorn, J. M.	INDIANA U-BLOOMINGTN	NGL 15-003-077	Neff, W. D.	61	1979
LARC		ISRAEL INST OF TECH	NGR 52-012-006	Nissim, E.	41	3620
LARC	Newman, J. C., Jr.	LEHIGH UNIVERSITY	NGL 39-007-040	Wei, R. P.	47	3054
LARC	Illg, W.	LEHIGH UNIVERSITY	NGR 39-007-011	Erdogan, F.	21	3055
LARC	Roderick, G. L.	LEHIGH UNIVERSITY	NGR 39-007-011	Erdogan, F.	21	3055
LARC	Poe, C. C.	LEHIGH UNIVERSITY	NGR 39-007-066	Sih, G. C.	46	3060
LARC	Fichter, W. B.	LEHIGH UNIVERSITY	NGR 39-007-066	Sih, G. C.	46	3060
LARC	Cawthorn, J. M.	LOUGHBOROUGH U TECH	NGR 52-140-002	Lowson, M. V.	41	3618
LARC	Hubbard, H. H.	LOUGHBOROUGH U TECH	NGR 52-140-002	Lowson, M. V.	41	3618
LARC	Anderson, G. Y.	LA STATE U-BAT ROUGE	NAS 1-10341	Groves, F. R.	49	2087
LARC	Swann, R. T.	LA STATE U-BAT ROUGE	NGL 19-001-059	Pike, R. W.	49	2095
LARC	Johnson, D. L.	LA STATE U-BAT ROUGE	NGL 19-001-068	Whitehurst, C. A.	49	2096
LARC	Dodgen, J. A.	MARQUETTE UNIVERSITY	NGR 50-001-009	Foudriat, E. C.	45	3559
LARC	Soffen, G. A.	MASS INST OF TECH	NAS 1-9684	Biemann, K.	12	2246
LARC	Soffen, G. A.	MASS INST OF TECH	NAS 1-9691	Rich, A.	51	2247
LARC	Soffen, G. A.	MASS INST OF TECH	NAS 1-9702	Shapiro, I. T.	45	2248
LARC	Taylor, R. T.	MASS INST OF TECH	NAS 1-9812	Covert, E. E.	19	2249
LARC		MASS INST OF TECH	NAS 1-10677		42	2250
LARC	Howell, J. Q.	MASS INST OF TECH	NAS 1-10693	Staelin, D. H.	31	2251
LARC	Dodgen, J. A.	MASS INST OF TECH	NAS 1-11092	Phillips, N. A.	31	2252
LARC	Russell, J. M., III	MASS INST OF TECH	NAS 1-11092	Phillips, N. A.	31	2252
LARC	Whitten, J. B.	MASS INST OF TECH	NGL 22-009-002	Sheridan, T. B.	45	2308
LARC	Whitten, J. B.	MASS INST OF TECH	NGL 22-009-025	Young, L. R.	41	2316
LARC	Cawthorn, J. M.	MASS INST OF TECH	NGL 22-009-334	Pierce, A. D.	41	2324
LARC	Maglieri, D. J.	MASS INST OF TECH	NGL 22-009-334	Pierce, A. D.	41	2324
LARC	Breckenridge, R. A.	MASS INST OF TECH	NGL 22-009-337	Penfield, P.	45	2325
LARC	Fales, C. L.	MASS INST OF TECH	NGL 22-009-337	Penfield, P.	45	2325
LARC	Rainey, A. G.	MASS INST OF TECH	NGL 22-009-571	Deyst, J. J.	41	2329

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LARC	Mace, W. D.	MASS INST OF TECH	NGL 22-009-640	Simpson, R. W.	41	2331
LARC	Mace, W. D.	MASS INST OF TECH	NGL 22-009-640	Simpson, R. W.	41	2331
LARC	Carlson, H. W.	MASS INST OF TECH	NGR 22-009-618	Toong, T. G.	41	2354
LARC	Barger, R. L.	MASS INST OF TECH	NGR 22-009-618	Toong, T. G.	41	2354
LARC	Stone, R. W., Jr.	MASS INST OF TECH	NGR 22-009-701	Young, L. R.	41	2365
LARC	Queijo, M. J.	MASS INST OF TECH	NGR 22-009-701	Young, L. R.	41	2365
LARC	Gera, J.	MASS INST OF TECH	NGR 22-009-731	Markey, W.	41	2370
LARC	Phillips, W. H.	MASS INST OF TECH	NGR 22-009-731	Markey, W.	41	2370
LARC	Kyser, A. C.	MASS INST OF TECH	NGR 22-009-781	Mar, J. W.	41	2373
LARC	Mikulas, M. M., Jr.	MASS INST OF TECH	NGR 22-009-781	Mar, J. W.	41	2373
LARC	Stewart, E. C.	MASS INST OF TECH	NGR 22-009-782	Deyst, J. J.	41	2374
LARC		MICHIGAN STATE UNIV	NAS 1-6860		13	2412
LARC	Weinstein, L. M.	MICHIGAN STATE UNIV	NGR 23-004-085	Krzywoblocki, M. Z.	41	2419
LARC	Young, W. H., Jr.	MICHIGAN STATE UNIV	NGR 23-004-085	Krzywoblocki, M. Z.	41	2419
LARC	Morrisette, E. L.	MICHIGAN STATE UNIV	NGR 23-004-089	Foss, J. F.	41	2420
LARC	Jones, W. L.	NEW YORK UNIVERSITY	NAS 1-10090	Pierson, W. J.	99	2803
LARC	Freeman, R. S.	NEW YORK UNIVERSITY	NAS 1-10282	Korer, S. A.	31	2804
LARC	Fetterman, D. E.	NEW YORK UNIVERSITY	NGL 33-016-119	Ferri, A.	41	2810
LARC	Huber, P. W.	NEW YORK UNIVERSITY	NGR 33-016-131	Ferri, A.	41	2813
LARC	Henry, J. R.	NEW YORK UNIVERSITY	NGR 33-016-131	Ferri, A.	41	2813
LARC	Bland, S. R.	NEW YORK UNIVERSITY	NGR 33-016-167	Garabedian, P. R.	41	2814
LARC	South, J. C., Jr.	NEW YORK UNIVERSITY	NGR 33-016-167	Garabedian, P. R.	41	2814
LARC	Maestrello, L.	NEW YORK UNIVERSITY	NGR 33-016-177	Ferri, A.	41	2816
LARC	McDaid, E. P.	NEW YORK UNIVERSITY	NGR 33-016-177	Ferri, A.	41	2816
LARC	Whitehead, A. H., Jr.	NEW YORK UNIVERSITY	NGR 33-016-179	Zakkay, V.	41	2817
LARC	Dunavant, J. C.	NEW YORK UNIVERSITY	NGR 33-016-179	Zakkay, V.	41	2817
LARC		NEW YORK UNIVERSITY	NGR 33-016-181	Zakkay, V.	41	2818
LARC	Bertram, M.	NEW YORK UNIVERSITY	NGR 33-016-181	Zakkay, V.	41	2818
LARC	Kirkham, F. S.	NEW YORK UNIVERSITY	NGR 33-016-193	Ferri, A.	41	2819
LARC	Hefner, J. N.	NEW YORK UNIVERSITY	NGR 33-016-193	Ferri, A.	41	2819
LARC	Stone, R. W.	NORFOLK STATE COL	NGR 47-025-001	Colegate, R. L.	62	3442
LARC	Fripp, A. L.	NO CAR A&T STATE U	NGR 34-012-004	Williams, L.	45	2892
LARC	Crane, H. L.	NO CAROLINA STATE U	NAS 1-9603	Smetana, F. O.	41	2893
LARC	McLaughlin, M. D.	NO CAROLINA STATE U	NAS 1-9603	Smetana, F. O.	41	2893
LARC	Hamilton, H. H.	NO CAROLINA STATE U	NAS 1-10277	Dejarnette, F. R.	41	2894
LARC	Armstrong, E. S.	NO CAROLINA STATE U	NGL 34-002-032	Sagan, H.	21	2900
LARC	Bird, J. D.	NO CAROLINA STATE U	NGL 34-002-032	Sagan, H.	21	2900
LARC	Edge, P. M.	NO CAROLINA STATE U	NGL 34-002-055	Pearson, R. G.	49	2902
LARC	Cawthorn, J. M.	NO CAROLINA STATE U	NGL 34-002-055	Pearson, R. G.	49	2902
LARC	Thomson, R. G.	NO CAROLINA STATE U	NGL 34-002-084	Chang, T. S.	41	2903
LARC	Cawthorn, J. M.	NO CAROLINA STATE U	NGL 34-002-095	Levere, T. E.	61	2904
LARC	Edge, P. M., Jr.	NO CAROLINA STATE U	NGL 34-002-095	Levere, T. E.	61	2904
LARC	Miller, W. E.	NO CAROLINA STATE U	NGL 34-002-098	Monteith, L. K.	13	2905
LARC	Hendricks, H. D.	NO CAROLINA STATE U	NGL 34-002-098	Monteith, L. K.	13	2905
LARC	Buckley, J. D.	NO CAROLINA STATE U	NGR 34-002-108	Manning, C. R.	47	2906
LARC	Hess, R. V.	NO CAROLINA STATE U	NGR 34-002-115	Hassan, H. A.	19	2907
LARC	Allario, F.	NO CAROLINA STATE U	NGR 34-002-115	Hassan, H. A.	19	2907
LARC	Hutchby, J. A.	NO CAROLINA STATE U	NGR 34-002-172	Monteith, L. K.	45	2908
LARC	Hendricks, H. D.	NO CAROLINA STATE U	NGR 34-002-172	Monteith, L. K.	45	2908
LARC	Crane, H. L.	NO CAROLINA STATE U	NGR 34-002-179	Smetana, F. O.	41	2911
LARC	Stickle, J. W.	NO CAROLINA STATE U	NGR 34-002-179	Smetana, F. O.	41	2911
LARC	Roderick, G. L.	NO CAROLINA STATE U	NGR 34-002-180	Fahmy, A. A.	41	2912
LARC	Imig, L. A.	NO CAROLINA STATE U	NGR 34-002-180	Fahmy, A. A.	41	2912
LARC	Turner, R. E.	NO CAROLINA STATE U	NGR 34-002-184	Moore, C. J.	21	2913
LARC	Sullivan, E. M.	NO CAROLINA STATE U	NGR 34-002-184	Moore, C. J.	21	2913
LARC	Bailey, M. C.	NO CAROLINA STATE U	NGR 34-002-188	Kauffman, J. F.	45	2914
LARC	Croswell, W. F.	NO CAROLINA STATE U	NGR 34-002-188	Kauffman, J. F.	45	2914
LARC	Hamilton, H. H., II	NO CAROLINA STATE U	NGR 34-002-193	Dejaarnette, F. R.	41	2915

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LARC	Cooper, P. A.	NORTHEASTERN UNIV	NGR 22-011-073	Rossettos, J. N.	41	2386
LARC	Painter, J. H.	NORTHWESTERN UNIV	NGR 14-007-129	Schaefer, B. M.	45	1902
LARC	Croswell, W. F.	OHIO STATE UNIV	NAS 1-10040	Peters, L.	45	2955
LARC	Naumann, E. C.	OHIO STATE UNIV	NGL 36-008-109	Bailey, C. D.	41	2966
LARC	Croswell, W. F.	OHIO STATE UNIV	NGL 36-008-138	Richmond, J. H.	45	2968
LARC	Jones, J. E.	OHIO STATE UNIV	NGL 36-008-138	Richmond, J. H.	45	2968
LARC	Cockrell, C. R.	OHIO STATE UNIV	NGR 36-008-144	Peters, L., Jr.	45	2971
LARC	Croswell, W. F.	OHIO STATE UNIV	NGR 36-008-144	Peters, L., Jr.	45	2971
LARC	Haggard, K. V.	OHIO STATE UNIV	NGR 36-008-163	Nerem, R. M.	13	2973
LARC	Painter, J. H.	OHIO STATE UNIV	NGR 36-008-169	Peake, W. H.	45	2975
LARC	Croswell, W. F.	OHIO STATE UNIV	NGR 36-008-177	Peters, L., Jr.	45	2976
LARC	Bailey, M. C.	OHIO STATE UNIV	NGR 36-008-177	Peters, L., Jr.	45	2976
LARC	Lester, H. C.	OHIO STATE UNIV	NGR 36-008-197	Bailey, C. D.	49	2978
LARC	Mace, W. D.	OHIO UNIVERSITY	NGR 36-009-017	McFarland, R. H.	41	2981
LARC	Mace, W. D.	OHIO UNIVERSITY	NGR 36-009-017	McFarland, R. H.	41	2981
LARC	Moul, M. T.	OKLAHOMA STATE UNIV	NGR 37-002-096	Rhoten, R. P.	45	3002
LARC	Cone, C. D.	OLD DOMINION UNIV	NAS 1-9434		99	3443
LARC	Maynard, J. D.	OLD DOMINION UNIV	NAS 1-9635	Barna, P. S.	41	3444
LARC	Royall, J. F.	OLD DOMINION UNIV	NAS 1-11707	Hill, H.	49	3445
LARC	Hellbaum, R. F.	OLD DOMINION UNIV	NGL 47-003-007	Goglia, G. L.	46	3448
LARC	Johnston, N. J.	OLD DOMINION UNIV	NGL 47-003-008	Williams, R. L.	12	3449
LARC	Bell, V. L.	OLD DOMINION UNIV	NGL 47-003-008	Williams, R. L.	12	3449
LARC	Leland, T. J.	OLD DOMINION UNIV	NGL 47-003-012	Cheng, R.	44	3450
LARC	Gentry, G. L., Jr.	OLD DOMINION UNIV	NGL 47-003-039	Ousterhout, D. S.	41	3451
LARC	Margason, R. J.	OLD DOMINION UNIV	NGL 47-003-039	Ousterhout, D. S.	41	3451
LARC	Yeager, P. R.	OLD DOMINION UNIV	NGR 47-003-040	Cox, J. L.	13	3453
LARC	Outlaw, R. A.	OLD DOMINION UNIV	NGR 47-003-040	Cox, J. L.	13	3453
LARC	Outlaw, R. A.	OLD DOMINION UNIV	NGR 47-003-043	Pittman, M. A.	13	3454
LARC	Phillips, D. H.	OLD DOMINION UNIV	NGR 47-003-048	Ake, R. L.	13	3455
LARC	Martin, D. J.	OLD DOMINION UNIV	NGR 47-003-052	Roberts, A. S.	41	3456
LARC	Huhten, W. C.	OLD DOMINION UNIV	NGR 47-003-068	Harris, F. S.	31	3457
LARC	McCormick, M. P.	OLD DOMINION UNIV	NGR 47-003-068	Harris, F. S.	31	3457
LARC	Goad, J. H., Jr.	OLD DOMINION UNIV	NGR 47-003-069	Chu, W. P.	13	3458
LARC	McCormick, M. P.	OLD DOMINION UNIV	NGR 47-003-069	Chu, W. P.	13	3458
LARC	Houghton, W. M.	OLD DOMINION UNIV	NGR 47-003-071	Bandy, A. R.	33	3459
LARC	Outlaw, R. A.	OLD DOMINION UNIV	NGR 47-003-077	Cox, J. L.	13	3460
LARC	Wilson, J. W.	OLD DOMINION UNIV	NGR 47-003-078	Khandelwal, G. S.	13	3461
LARC	Melfi, L. T., Jr.	OLD DOMINION UNIV	NGR 47-003-082	Clay, F. P.	13	3462
LARC	Mixson, J. S.	OLD DOMINION UNIV	NGR 47-003-083	Kirby, R. H.	69	3463
LARC	Reichle, H. G., Jr.	OREGON STATE UNIV	NGR 38-002-048	Olsson, L. E.	31	3019
LARC	Melfi, S. H.	OREGON STATE UNIV	NGR 38-002-048	Olsson, L. E.	31	3019
LARC	Bement, L. J.	PENNSYLVANIA STATE U	NAS 1-12045	Neubert, V. H.	46	3063
LARC	Hubbard, H. H.	PENNSYLVANIA STATE U	NGL 39-009-121	Reethof, G.	41	3077
LARC	Lansing, D. L.	PENNSYLVANIA STATE U	NGL 39-009-121	Reethof, G.	41	3077
LARC	Heyson, H. H.	PENNSYLVANIA STATE U	NGL 39-009-172	Eisenhuth, J. J.	41	3078
LARC	Schoonover, W. E., Jr.	PENNSYLVANIA STATE U	NGR 39-009-256	Park, W. H.	46	3091
LARC	Conner, D. W.	PENNSYLVANIA STATE U	NGR 39-009-256	Park, W. H.	46	3091
LARC	Soffen, G. A.	POMONA COLLEGE	NAS 1-11854	Baird, A. K.	12	1257
LARC	Soffen, G. A.	PRINCETON UNIVERSITY	NAS 1-9705	Hargraves, R. B.	13	2622
LARC	Crane, H. L.	PRINCETON UNIVERSITY	NAS 1-10075	Seckel, E.	41	2623
LARC	Crane, H. L.	PRINCETON UNIVERSITY	NAS 1-11231	Seckel, E.	41	2624
LARC	Stickle, J. W.	PRINCETON UNIVERSITY	NAS 1-11231	Seckel, E.	41	2624
LARC	Judd, J. H.	PRINCETON UNIVERSITY	NAS 1-11543	Seckel, E.	41	2625
LARC	Hassell, J. L., Jr.	PRINCETON UNIVERSITY	NAS 1-11543	Seckel, E.	41	2625
LARC	Sullivan, E. M.	PRINCETON UNIVERSITY	NGL 31-001-109	Summerfield, M.	41	2640
LARC	Henderson, H. H.	PRINCETON UNIVERSITY	NGL 31-001-119	Hayes, W. D.	41	2641
LARC	Hilton, D. A.	PRINCETON UNIVERSITY	NGL 31-001-119	Hayes, W. D.	41	2641
LARC	Bohon, H. L.	PRINCETON UNIVERSITY	NGL 31-001-146	Dowell, E. H.	42	2643

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
LARC	Mace, W. D.	PRINCETON UNIVERSITY	NGL 31-001-252	Graham, D.	41	2645
LARC	Mace, W. D.	PRINCETON UNIVERSITY	NGL 31-001-252	Graham, D.	41	2645
LARC	Pezdirtz, G. F.	PRINCETON UNIVERSITY	NGR 31-001-200	Gillham, J. K.	43	2655
LARC	Johnston, N. J.	PRINCETON UNIVERSITY	NGR 31-001-221	Gillham, J. K.	19	2659
LARC	Bell, V. L.	PRINCETON UNIVERSITY	NGR 31-001-221	Gillham, J. K.	19	2659
LARC	Maglieri, D. J.	PRINCETON UNIVERSITY	NGR 31-001-241	Summerfield, M.	41	2662
LARC	Maestrello, L.	PRINCETON UNIVERSITY	NGR 31-001-241	Summerfield, M.	41	2662
LARC	Hoell, J. M., Jr.	PRINCETON UNIVERSITY	NGR 31-001-263	Kelly, A. J.	13	2664
LARC	McHatton, A. D.	PRINCETON UNIVERSITY	NGR 31-001-272	Gillham, J. K.	43	2666
LARC	Margason, R. J.	PURDUE UNIVERSITY	NGL 15-005-094	Skifstad, J. G.	41	1993
LARC	Landrum, E. J.	PURDUE UNIVERSITY	NGR 15-005-119	Marshall, F. S.	41	2001
LARC	Harris, J. E.	PURDUE UNIVERSITY	NGR 15-005-119	Marshall, F. S.	41	2001
LARC		PURDUE UNIVERSITY	NGR 15-005-174		13	2008
LARC	Yeager, P. R.	RENSSELAER-CONN	NGL 07-009-003	Schwarz, H. J.	13	1691
LARC	Wood, G. M.	RENSSELAER-CONN	NGL 07-009-003	Schwarz, H. J.	13	1691
LARC	Bird, J. D.	RENSSELAER POLY-NY	NGR 33-018-183	Kaufman, H.	41	2838
LARC	Elliott, J. R.	RENSSELAER POLY-NY	NGR 33-018-183	Kaufman, H.	41	2838
LARC	Gentry, G. L., Jr.	ROSE-HULMAN INST TEC	NGR 15-008-008	Roper, A. T.	41	2014
LARC	Margason, R. J.	ROSE-HULMAN INST TEC	NGR 15-008-008	Roper, A. T.	41	2014
LARC	Tolefson, H. B.	ST LOUIS UNIVERSITY	NGL 26-006-016	Pallmann, A. J.	31	2548
LARC	Fulton, R. E.	ST LOUIS UNIVERSITY	NGL 26-006-021	Rhodes, J. L.	41	2549
LARC	Fripp, A. L.	SOUTHERN METHODIST U	NAS 1-11869	Chu, T. L.	47	3232
LARC	Ayers, W. G.	SOUTHERN METHODIST U	NAS 1-11869	Chu, T. L.	47	3232
LARC	Robertson, J. B.	SOUTHERN METHODIST U	NGL 44-007-042	Chu, T. L.	47	3234
LARC	Breckenridge, R. A.	SOUTHERN METHODIST U	NGL 44-007-042	Chu, T. L.	47	3234
LARC	Bracalente, E. M.	SOUTHERN METHODIST U	NGR 44-007-049	Gupta, S. C.	45	3237
LARC	Painter, J. H.	SOUTHERN METHODIST U	NGR 44-007-049	Gupta, S. C.	45	3237
LARC	Crouch, R. K.	SOUTHERN METHODIST U	NGR 44-007-052	Chu, T. L.	47	3238
LARC	Breckenridge, R. A.	SOUTHERN METHODIST U	NGR 44-007-052	Chu, T. L.	47	3238
LARC	Soffen, G. A.	STANFORD UNIVERSITY	NAS 1-9682	Levinthal, E. C.	13	1258
LARC	Soffen, G. A.	STANFORD UNIVERSITY	NAS 1-9692	Lederberg, J.	51	1259
LARC	Soffen, G. A.	STANFORD UNIVERSITY	NAS 1-9701	Tyler, G. L.	45	1260
LARC	Rainey, A. G.	STANFORD UNIVERSITY	NGL 05-020-243	Ashley, H.	41	1310
LARC	Reed, W. H., III	STANFORD UNIVERSITY	NGL 05-020-243	Ashley, H.	41	1310
LARC	Runyan, H. L.	STANFORD UNIVERSITY	NGL 05-020-397	Herrmann, G.	41	1316
LARC	Reed, W. H.	STANFORD UNIVERSITY	NGL 05-020-397	Herrmann, G.	41	1316
LARC	Soffen, G. A.	STATE U NY-STONY BRK	NAS 1-10493	Owens, T.	13	2849
LARC	Batterson, S. A.	STEVENS INST OF TECH	NAS 1-9349	Ehrlich, I. R.	41	2679
LARC	Mayes, W.	SYRACUSE UNIVERSITY	NGL 33-022-082	Dosanjh, D.	13	2871
LARC	Dibattista, J. D.	TENNESSEE TECH U	NAS 1-10967	Kinslow, R.	13	3152
LARC	Kinard, W. H.	TENNESSEE TECH U	NAS 1-10967	Kinslow, R.	13	3152
LARC	Crouch, R. K.	TENNESSEE TECH U	NGR 43-003-012	McLennan, W. D.	13	3153
LARC	Hardesty, C. A.	TENNESSEE TECH U	NGR 43-003-012	McLennan, W. D.	13	3153
LARC	Walsh, T. M.	TEXAS A&M UNIVERSITY	NAS 1-11276	Rouse, J. W., Jr.	45	3241
LARC	Howell, J. E.	TEXAS A&M UNIVERSITY	NAS 1-11276	Rouse, J. W., Jr.	45	3241
LARC	Wilson, C.	TEXAS TECH UNIV	NAS 1-9506	Gully, A. J.	12	3274
LARC	Kopia, L. P.	UNIV CALIF-L ANGELES	NAS 1-10107	Sekera, Z.	31	1465
LARC	Beatty, M. E.	UNIV CALIF-L ANGELES	NAS 1-10107	Sekera, Z.	31	1465
LARC	Fulton, R. E.	UNIV CALIF-L ANGELES	NGR 05-007-337	Schmit, L. A.	41	1511
LARC	Bland, S. R.	UNIV CALIF-L ANGELES	NGR 05-007-395	Cole, J. D.	41	1516
LARC	Bennett, R. M.	UNIV CALIF-L ANGELES	NGR 05-007-395	Cole, J. D.	41	1516
LARC	Reichle, H. G.	UNIV CALIF-RIVERSIDE	NAS 1-10373	Behar, J. V.	31	1518
LARC		UNIV CALIF-SAN DIEGO	NGR 05-009-178	Libby, P. A.	41	1560
LARC	Bertram, M. H.	UNIV CALIF-SAN DIEGO	NGR 05-009-178	Libby, P. A.	41	1560
LARC	Gloss, B. B.	UNIV CALIF-S BARBARA	NGR 05-010-025	Bossel, H. H.	41	1576
LARC	Harris, J. E.	UNIV OF CINCINNATI	NAS 1-11104	Davis, R. T.	41	2982
LARC	Beckwith, I. E.	UNIV OF CINCINNATI	NAS 1-11104	Davis, R. T.	41	2982
LARC	Harrison, E. F.	UNIV OF CINCINNATI	NAS 1-11105	Herget, P.	11	2983

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LARC	Brooks, D. R.	UNIV OF CINCINNATI	NAS 1-11105	Herget, P.	11	2983
LARC	Queijo, M. J.	UNIV OF CINCINNATI	NGR 36-004-061	Wells, W. R.	41	2988
LARC	Suit, W. T.	UNIV OF CINCINNATI	NGR 36-004-061	Wells, W. R.	41	2988
LARC	Price, H. L.	UNIV OF CINCINNATI	NGR 36-004-063	Chartoff, R. P.	43	2989
LARC	Davis, R. C.	UNIV OF CINCINNATI	NGR 36-004-065	Sobel, L. H.	41	2991
LARC	Peterson, J. P.	UNIV OF CINCINNATI	NGR 36-004-065	Sobel, L. H.	41	2991
LARC	Beckwith, I. E.	UNIV OF CINCINNATI	NGR 36-004-069	Davis, R. T.	41	2992
LARC	Harris, J. E.	UNIV OF CINCINNATI	NGR 36-004-069	Davis, R. T.	41	2992
LARC	Spiers, R. B.	UNIV COLORADO-BOLDR	NAS 1-10388	Barth, C. A.	31	1649
LARC	Kopia, L. P.	UNIV COLORADO-BOLDR	NAS 1-10388	Barth, C. A.	31	1649
LARC	Hendricks, H. D.	UNIV COLORADO-BOLDR	NGR 06-003-205	Chernow, F.	13	1672
LARC	Hutchby, J. A.	UNIV COLORADO-BOLDR	NGR 06-003-205	Chernow, F.	13	1672
LARC	Creedon, J. F.	UNIV OF CONNECTICUT	NGL 07-002-002	Lindorff, D. P.	41	1699
LARC	Whitman, R. I.	UNIV OF DELAWARE	NAS 1-12304	Klemas, V.	39	1724
LARC	Johnson, R. W.	UNIV OF DELAWARE	NAS 1-12304	Klemas, V.	39	1724
LARC	Russell, J. M., III	UNIV OF DENVER	NGR 06-004-128	Murcay, D. G.	31	1687
LARC		UNIV OF FLORIDA	NAS 1-5722		49	1787
LARC	Hohl, F.	UNIV OF FLORIDA	NGL 10-005-089	Schneider, R. T.	13	1801
LARC	Shaw, C. S.	UNIV OF FLORIDA	NGL 10-005-127	Fearn, R. L.	41	1802
LARC	Margason, R. J.	UNIV OF FLORIDA	NGL 10-005-127	Fearn, R. L.	41	1802
LARC	Soffen, G. A.	UNIV OF HOUSTON	NAS 1-9685	Oro, J.	13	3283
LARC	Edge, P. M., Jr.	UNIV ILLINOIS-URBANA	NGL 14-005-074	Ades, H. W.	52	1953
LARC	Cawthorn, J. M.	UNIV ILLINOIS-URBANA	NGL 14-005-074	Ades, H. W.	52	1953
LARC	Tompkins, S. S.	UNIV ILLINOIS-URBANA	NGR 14-005-138	Clausing, A. M.	41	1959
LARC	Swann, R. T.	UNIV ILLINOIS-URBANA	NGR 14-005-138	Clausing, A. M.	41	1959
LARC	Morgan, H. L.	UNIV ILLINOIS-URBANA	NGR 14-005-144	Ormsbee, A. I.	41	1960
LARC	Allerio, F.	UNIV ILLINOIS-URBANA	NGR 14-005-183	Miley, G. H.	12	1966
LARC	Crane, H. L.	UNIV ILLINOIS-URBANA	NGR 14-005-194	Ormsbee, A. I.	41	1970
LARC	Stickle, J. W.	UNIV ILLINOIS-URBANA	NGR 14-005-194	Ormsbee, A. I.	41	1970
LARC	Bowker, D. E.	UNIV OF IOWA	NAS 1-8141	Van Allen, J. A.	11	2024
LARC	Coffee, C. W., Jr.	UNIV OF IOWA	NAS 1-11257	Van Allen, J. A.	13	2025
LARC	Woerner, C. V.	UNIV OF IOWA	NAS 1-11257	Van Allen, J. A.	13	2025
LARC	Jones, W. L.	UNIV OF KANSAS	NAS 1-10048	Moore, R. K.	99	2048
LARC	Lamar, J. E.	UNIV OF KANSAS	NGR 17-002-071	Roskam, J.	41	2061
LARC	Crane, H. L.	UNIV OF KANSAS	NGR 17-002-072	Kohlman, D. L.	41	2062
LARC	Stickle, J. W.	UNIV OF KANSAS	NGR 17-002-072	Kohlman, D. L.	41	2062
LARC	Walsh, T. M.	UNIV OF KANSAS	NGR 17-002-079	Lenzen, K. H.	41	2063
LARC	Lawrence, J. D.	UNIV OF KANSAS	NGR 17-002-089	Zeller, E. J.	31	2064
LARC	Cocke, B. W.	UNIV OF KANSAS	NGR 17-002-089	Zeller, E. J.	31	2064
LARC	Lamar, J. E.	UNIV OF KANSAS	NGR 17-002-107	Lan, C. T.	41	2066
LARC	Campbell, J. F.	UNIV OF KANSAS	NGR 17-002-107	Lan, C. T.	41	2066
LARC	Pride, R. A.	UNIV OF KANSAS	NGR 17-004-027	Lenzen, K. H.	41	2067
LARC	Dexter, H. B.	UNIV OF KANSAS	NGR 17-004-027	Lenzen, K. H.	41	2067
LARC	Reichle, H. G.	UNIV MICH-ANN ARBOR	NAS 1-9958	Hays, P. B.	31	2424
LARC	McCarty, J. L.	UNIV MICH-ANN ARBOR	NGL 23-005-010	Clark, S. R.	41	2449
LARC	Tripp, J. S.	UNIV MICH-ANN ARBOR	NGR 23-005-427	Zeigler, B. P.	49	2461
LARC	Russell, C. H.	UNIV MICH-ANN ARBOR	NGR 23-005-427	Zeigler, B. P.	49	2461
LARC	Murray, W. D.	UNIV MICH-ANN ARBOR	NGR 23-005-463	Meyer, J. F.	45	2462
LARC	Bavuso, S. J.	UNIV MICH-ANN ARBOR	NGR 23-005-463	Meyer, J. F.	45	2462
LARC	Russell, J. M., III	UNIV MICH-ANN ARBOR	NGR 23-005-470	Bartman, F. L.	31	2464
LARC	Croswell, W. F.	UNIV MICH-ANN ARBOR	NGR 23-005-477	Tai, C. T.	45	2465
LARC	Beck, F. B.	UNIV MICH-ANN ARBOR	NGR 23-005-477	Tai, C. T.	45	2465
LARC	Czarnecki, K. R.	UNIV MICH-ANN ARBOR	NGR 23-005-523	Sichel, M.	41	2467
LARC	Fichter, W. B.	UNIV MICH-ANN ARBOR	NGR 23-005-528	Atkins, A. G.	46	2468
LARC	Russell, J. M., III	UNIV MICH-ANN ARBOR	NGR 23-005-538	Bartman, F. L.	31	2471
LARC	Lanford, W. E.	UNIV MICH-ANN ARBOR	NGR 23-005-599	Stedman, D. H.	12	2479
LARC	Tripp, J. S.	UNIV MICH-ANN ARBOR	NGR 23-005-602	Zeigler, B. P.	49	2480
LARC	Adams, J. A.	UNIV MICH-ANN ARBOR	NSR 23-005-364	Howe, R. M.	99	2482

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LARC	Soffen, G. A.	U MINN-MNPLS-ST PAUL	NAS 1-9697	Nier, A. O.	31	2490
LARC	Melfi, L. T.	U MINN-MNPLS-ST PAUL	NAS 1-10511	Nier, A. O.	31	2491
LARC	Melfi, L. T.	U MINN-MNPLS-ST PAUL	NAS 1-11676	Nier, A. O.	31	2492
LARC	Prior, E. J.	U MINN-MNPLS-ST PAUL	NAS 1-11676	Nier, A. O.	31	2492
LARC	Russell, J. M., III	UNIV NEW BRUNSWICK	NGR 52-163-001	Young, C.	31	3614
LARC	Reichle, H. G., Jr.	UNIV NEW BRUNSWICK	NGR 52-163-001	Young, C.	31	3614
LARC	Soffen, G. A.	UNIV OF NEW MEXICO	NAS 1-11855	Keil, K.	12	2693
LARC	Hellbaum, R. F.	UNIV OF NEW MEXICO	NGR 32-004-026	Richards, C. G.	46	2703
LARC	Fripp, A. L.	UNIV OF NOTRE DAME	NAS 1-12468	Gajda, W. J., Jr.	45	2015
LARC	Stermer, R. L.	UNIV OF NOTRE DAME	NAS 1-12468	Gajda, W. J., Jr.	45	2015
LARC	Wilson, J. W.	UNIV OF PENNSYLVANIA	NGR 39-010-114	Shen, B. S.	39	3102
LARC	Soffen, G. A.	UNIV OF ROCHESTER	NAS 1-9689	Vishniac, W.	51	2879
LARC	Jachimowski, C. J.	UNIV OF SO CAROLINA	NGR 41-002-026	Connor, L. N.	49	3144
LARC	Erickson, W. D.	UNIV OF SO CAROLINA	NGR 41-002-026	Connor, L. N.	49	3144
LARC	Thomson, R. G.	UNIV OF SO FLORIDA	NGR 10-008-028	Oline, L. W.	49	1818
LARC	Hayduk, R. J.	UNIV OF SO FLORIDA	NGR 10-008-028	Oline, L. W.	49	1818
LARC	Weinstain, L.	UNIV OF SOUTHERN CAL	NGR 05-018-140	Laufer, J.	41	1612
LARC	Bushnell, D. M.	UNIV OF SOUTHERN CAL	NGR 05-018-140	Laufer, J.	41	1612
LARC	Bell, V. L.	UNIV SO MISSISSIPPI	NGR 25-005-005	Thames, S. F.	12	2547
LARC	Johnston, N. J.	UNIV SO MISSISSIPPI	NGR 25-005-005	Thames, S. F.	12	2547
LARC	Lansing, D. L.	UNIV TENNESSEE-KNOXV	NGL 43-001-075	Gruschka, H. G.	11	3168
LARC	Heyson, H. H.	UNIV TENNESSEE-KNOXV	NGL 43-001-086	Braun, G. W.	41	3169
LARC	Bland, S. R.	UNIV TENNESSEE-KNOXV	NGR 43-001-102	Wu, J. M.	41	3171
LARC	Fetterman, D. E.	UNIV TENNESSEE-KNOXV	NGR 43-001-124	Chaudhuri, S. N.	41	3175
LARC	Soffen, G. A.	UNIV TEXAS-DALLAS	NAS 1-9699	Hanson, W. B.	31	3358
LARC	Henry, R. M.	UNIV OF UTAH	NGL 45-003-025	Staffanson, F. L.	31	3418
LARC	Kelly, W. L.	UNIV OF VIRGINIA	NAS 1-10210	White, E. J.	45	3466
LARC	Yates, E. C., Jr.	UNIV OF VIRGINIA	NGL 47-005-098	Haviland, J. K.	41	3473
LARC	Fulton, R. E.	UNIV OF VIRGINIA	NGL 47-005-098	Haviland, J. K.	41	3473
LARC	Rainey, A. G.	UNIV OF VIRGINIA	NGL 47-005-108	Haviland, J. K.	41	3474
LARC	Clevenson, S. A.	UNIV OF VIRGINIA	NGL 47-005-151	Allison, J. L.	49	3475
LARC	Stephens, D. G.	UNIV OF VIRGINIA	NGL 47-005-151	Allison, J. L.	49	3475
LARC	Ocheltree, S. L.	UNIV OF VIRGINIA	NGR 47-005-093	Mattauch, R. J.	49	3476
LARC	Gross, C.	UNIV OF VIRGINIA	NGR 47-005-093	Mattauch, R. J.	49	3476
LARC	Hamlet, I. L.	UNIV OF VIRGINIA	NGR 47-005-112	Zapata, R. N.	41	3477
LARC	Kilgore, R. A.	UNIV OF VIRGINIA	NGR 47-005-112	Zapata, R. N.	41	3477
LARC	Parrish, R. V.	UNIV OF VIRGINIA	NGR 47-005-145	Pilkey, W. D.	46	3478
LARC	Sewall, J. L.	UNIV OF VIRGINIA	NGR 47-005-145	Pilkey, W. D.	46	3478
LARC	Dow, M. B.	UNIV OF VIRGINIA	NGR 47-005-179	Mann, J. E.	21	3482
LARC	Tompkins, S. S.	UNIV OF VIRGINIA	NGR 47-005-179	Mann, J. E.	21	3482
LARC	Schoonover, W. E., Jr.	UNIV OF VIRGINIA	NGR 47-005-181	Kuhlthau, A. R.	41	3483
LARC		UNIV OF VIRGINIA	NGR 47-005-208		41	3486
LARC	Soffen, G. A.	UNIV OF WASHINGTON	NAS 1-9694	Leovy, C. B.	13	3527
LARC	Heyson, H. H.	UNIV OF WASHINGTON	NGL 48-002-010	Joppa, R. G.	41	3532
LARC	Heyson, H. H.	UNIV OF WASHINGTON	NGL 48-002-035	Rae, W. H.	41	3533
LARC	Heyson, H. H.	UNIV OF WASHINGTON	NGR 48-002-129	Fischbach, D. B.	47	3542
LARC	Buckley, J. D.	UNIV OF WASHINGTON	NGR 48-002-129	Fischbach, D. B.	47	3542
LARC	Young, W. H.	UNIV WISC-MILWAUKEE	NGR 50-007-001	Bratanow, T.	41	3600
LARC	Ward, J. F.	UNIV WISC-MILWAUKEE	NGR 50-007-001	Bratanow, T.	41	3600
LARC	White, W. F.	UNIV OF WYOMING	NGL 51-001-010	Rhinehart, E. A.	13	3605
LARC	Hulten, W. C.	UNIV OF WYOMING	NGR 51-001-028	Rosen, J. M.	31	3606
LARC	McCormick, M. P.	UNIV OF WYOMING	NGR 51-001-028	Rosen, J. M.	31	3606
LARC	McCormick, M. P.	UNIV OF WYOMING	NGR 51-001-045	Rosen, J. M.	31	3610
LARC	Hulten, W. C.	UNIV OF WYOMING	NGR 51-001-045	Rosen, J. M.	31	3610
LARC	Hohl, F.	VANDERBILT UNIVERSTY	NGR 43-002-031	Roos, C. E.	13	3184
LARC	Wood, G. P.	VANDERBILT UNIVERSTY	NGR 43-002-031	Roos, C. E.	13	3184
LARC	Wilkins, J. R.	VIRGINIA COMNWLTH U	NGL 47-002-020	Dalton, H. P.	51	3490
LARC	Johnston, N. J.	VIRGINIA COMNWLTH U	NGR 47-002-041	Stump, B. L.	12	3493

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LARC	Bell, V. L.	VIRGINIA COMNWLTH U	NGR 47-002-041	Stump, B. L.	12	3493
LARC	Anderson, G. Y.	VIRGINIA POLY INST	NAS 1-10233	Schetz, J. A.	41	3494
LARC	Russin, W. R.	VIRGINIA POLY INST	NAS 1-10233	Schetz, J. A.	41	3494
LARC	Byvik, C. E.	VIRGINIA POLY INST	NAS 1-10646	Wightman, J. P.	31	3495
LARC	Phillips, D. H.	VIRGINIA POLY INST	NGL 47-004-040	Schug, J. C.	12	3501
LARC	Hendricks, H. D.	VIRGINIA POLY INST	NGL 47-004-040	Schug, J. C.	12	3501
LARC	Moss, J. N.	VIRGINIA POLY INST	NGR 47-004-070	Lewis, C. H.	41	3504
LARC	Swann, R. T.	VIRGINIA POLY INST	NGR 47-004-070	Lewis, C. H.	41	3504
LARC	Newman, J. C., Jr.	VIRGINIA POLY INST	NGR 47-004-076	Smith, C. W.	46	3505
LARC	Poe, C. C., Jr.	VIRGINIA POLY INST	NGR 47-004-076	Smith, C. W.	46	3505
LARC	Stein, B. A.	VIRGINIA POLY INST	NGR 47-004-082	Tenney, D. R.	47	3506
LARC	Herring, H. W.	VIRGINIA POLY INST	NGR 47-004-082	Tenney, D. R.	47	3506
LARC	Nagel, A. L.	VIRGINIA POLY INST	NGR 47-004-089	Leach, J. W.	41	3507
LARC	Martin, D. J.	VIRGINIA POLY INST	NGR 47-004-090	Bandy, A. R.	41	3508
LARC	Herring, H. W.	VIRGINIA POLY INST	NGR 47-004-097	Tenney, D. R.	47	3511
LARC	Stein, B. A.	VIRGINIA POLY INST	NGR 47-004-097	Tenney, D. R.	47	3511
LARC	Pride, R. A.	VIRGINIA POLY INST	NGR 47-004-101	Herakovich, C. T.	47	3514
LARC	Davis, J. G., Jr.	VIRGINIA POLY INST	NGR 47-004-101	Herakovich, C. T.	47	3514
LARC	Beckwith, I. E.	VIRGINIA POLY INST	NGR 47-004-106	Schetz, J. A.	41	3517
LARC	Carey, A. M.	VIRGINIA POLY INST	NGR 47-004-106	Schetz, J. A.	41	3517
LARC	Stein, B. A.	VIRGINIA POLY INST	NGR 47-004-108	Lytton, J. L.	47	3518
LARC	Herring, H. W.	VIRGINIA POLY INST	NGR 47-004-108	Lytton, J. L.	47	3518
LARC	Zorumski, W. E.	VIRGINIA POLY INST	NGR 47-004-109	Nayfeh, A. H.	13	3519
LARC	Lansing, D. L.	VIRGINIA POLY INST	NGR 47-004-109	Nayfeh, A. H.	13	3519
LARC		VIRGINIA POLY INST	NGR 47-004-114	Melosh, R. J.	49	3520
LARC	Hayduk, R. J.	VIRGINIA POLY INST	NGR 47-004-114	Melosh, R. J.	49	3520
LARC	Montgomery, R. C.	VIRGINIA POLY INST	NGR 47-004-116	Hasdorff, I.	41	3521
LARC	Bird, J. D.	VIRGINIA POLY INST	NGR 47-004-116	Hasdorff, I.	41	3521
LARC	Lansing, D. L.	VIRGINIA STATE COL	NGR 47-014-005	Agrawal, K. M.	41	3524
LARC	Beck, S. M.	VIRGINIA STATE COL	NGR 47-014-006	Shonoch, C. E.	13	3525
LARC	Martin, D. J.	VIRGINIA STATE COL	NGR 47-014-007	Van Dyke, A.	42	3526
LARC	Mehrens, H. E.	VIRGINIA STATE COL	NGR 47-014-007	Van Dyke, A.	42	3526
LARC	Johnson, J. W.	WEST VIRGINIA UNIV	NGR 49-001-056	Balanis, C. A.	45	3557
LARC	Kendall, B. M.	WEST VIRGINIA UNIV	NGR 49-001-056	Balanis, C. A.	45	3557
LARC	Kirby, C. E.	WEST VIRGINIA UNIV	NGR 49-001-061	Steinhardt, E.	39	3558
LARC	Lamar, J. E.	WICHITA STATE UNIV	NGR 17-003-020	Snyder, M. H.	41	2071
LARC	Polhamus, E. C.	WICHITA STATE UNIV	NGR 17-003-020	Snyder, M. H.	41	2071
LARC	Holmes, H. K.	YOUNGSTOWN STATE U	NGR 36-028-004	Zuckerwar, A. J.	45	2998
LARC	Gray, D. L.	YOUNGSTOWN STATE U	NGR 36-028-006	Zuckerwar, A. J.	49	2999
LERC	Misencik, J. A.	BROWN UNIVERSITY	NGL 40-002-080	Mylonas, C.	46	3125
LERC	Smith, G. T.	BROWN UNIVERSITY	NGL 40-002-080	Mylonas, C.	46	3125
LERC	Katsanis, T.	BUCKNELL UNIVERSITY	NGR 39-027-002	Maxwell, B. R.	49	3033
LERC	Seasholtz, R. G.	BUCKNELL UNIVERSITY	NGR 39-027-002	Maxwell, B. R.	49	3033
LERC	Evvard, J. C.	CALIF INST OF TECH	NGL 05-002-136	Rannie, W. D.	46	1203
LERC	Townsend, D. P.	CAL STATE U-CHICO	NAS 3-12426	Allen, C. W.	49	1239
LERC	Breitwieser, R.	CAL STATE U-LG BEACH	NGR 05-013-010	Luke, K. P.	13	1245
LERC	Scibbe, H. W.	CAL STATE U-NRTHRDGE	NGR 05-062-002	Nypan, L. J.	46	1248
LERC	Anderson, W. J.	CAL STATE U-NRTHRDGE	NGR 05-062-002	Nypan, L. J.	46	1248
LERC	Priem, R. J.	CAL STATE U-SACRAMEN	NGR 05-058-003	Reardon, F. H.	45	1249
LERC	Brown, W. F., Jr.	CARNEGIE-MELLON UNIV	NGR 39-087-003	Low, J. R.	47	3037
LERC	Misencik, J. A.	CARNEGIE-MELLON UNIV	NGR 39-087-047	Low, J. R., Jr.	47	3042
LERC	Smith, G. T.	CARNEGIE-MELLON UNIV	NGR 39-087-047	Low, J. R., Jr.	47	3042
LERC	Evvard, J. C.	CASE WESTERN RESERVE	NGL 36-003-064	Reshotko, E.	46	2930
LERC	Quatinetz, M.	CASE WESTERN RESERVE	NGL 36-003-094	Ebert, L. B.	47	2931
LERC	Anderson, B. H.	CASE WESTERN RESERVE	NGL 36-027-032	Reshotko, E.	41	2933
LERC	Holdeman, J. D.	CASE WESTERN RESERVE	NGR 36-027-008	Greber, I.	41	2936
LERC	Ashbrook, R. L.	CASE WESTERN RESERVE	NGR 36-027-035	Wallace, J. F.	47	2939
LERC	Anderson, B. H.	CASE WESTERN RESERVE	NGR 36-027-038	Reshotko, E.	41	2940

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LERC	Gray, H. R.	CASE WESTERN RESERVE	NGR 36-027-040	Troiano, A. R.	47	2941
LERC	Ashbrook, R. L.	CASE WESTERN RESERVE	NGR 36-027-040	Troiano, A. R.	47	2941
LERC	Usher, R. J.	CASE WESTERN RESERVE	NGR 36-027-047	Boltz, R. E.	49	2942
LERC	Gray, H. R.	CASE WESTERN RESERVE	NGR 36-027-051	Hehemann, R. H.	47	2944
LERC	Andrews, C. W.	CASE WESTERN RESERVE	NGR 36-027-051	Hehemann, R. H.	47	2944
LERC	Deissler, R. G.	CATHOLIC UNIVERSITY	NGR 09-005-076	Ling, S. C.	13	1739
LERC	Deissler, R. G.	CATHOLIC UNIVERSITY	NGR 09-005-099	Ling, S. C.	41	1742
LERC	Grimes, H. H.	CENTRAL ST UNIV-OHIO	NGR 36-033-001	Hartzler, E. A.	13	2949
LERC	Raquet, C. A.	CENTRAL ST UNIV-OHIO	NGR 36-033-002	Rubin, D.	39	2950
LERC	Fordyce, J. S.	CENTRAL ST UNIV-OHIO	NGR 36-033-003	Craft, T. J.	51	2951
LERC		CITY COLLEGE OF N Y	NAS 3-6926		42	2709
LERC	Putre, H.	CITY COLLEGE OF N Y	NGL 33-013-029	Pfeffer, R.	13	2711
LERC	Grobmar, J.	CLEMSON UNIV-CLEMSON	NGR 41-001-031	Yang, T. T.	41	3138
LERC	Feehasr, A. F.	CLEMSON UNIV-CLEMSON	NGR 41-001-031	Yang, T. T.	41	3138
LERC	Gedney, R. T.	COLORADO STATE UNIV	NAS 3-17213	Veckers, R. S.	33	1628
LERC	Misencik, J. A.	COLORADO STATE UNIV	NGL 06-002-063	Smith, F. W.	46	1636
LERC	Smith, G. T.	COLORADO STATE UNIV	NGL 06-002-063	Smith, F. W.	46	1636
LERC	Brown, G. V.	COLORADO STATE UNIV	NGR 06-002-094	Wilmsen, C. W.	13	1638
LERC	Laurence, J. C.	COLORADO STATE UNIV	NGR 06-002-094	Wilmsen, C. W.	13	1638
LERC	Priem, R. J.	COLORADO STATE UNIV	NGR 06-002-095	Mitchell, C. E.	46	1639
LERC	Kerslake, W. R.	COLORADO STATE UNIV	NGR 06-002-112	Wilbur, P. J.	42	1642
LERC	Serafini, J. S.	COLORADO STATE UNIV	NGR 06-002-147	Wilhelm, H. E.	42	1646
LERC	Evvard, J. C.	CORNELL UNIVERSITY	NGL 33-010-042	Moore, F. K.	46	2756
LERC	Laurence, J. C.	CORNELL UNIVERSITY	NGR 33-010-188	Ashcroft, N. W.	13	2779
LERC	Brown, G. V.	CORNELL UNIVERSITY	NGR 33-010-188	Ashcroft, N. W.	13	2779
LERC	Coles, W. D.	CORNELL UNIVERSITY	NGR 33-010-189	Ruoff, A. L.	13	2780
LERC	Laurence, J. C.	CORNELL UNIVERSITY	NGR 33-010-189	Ruoff, A. L.	13	2780
LERC	Baker, C. E.	GEORGE WASHINGTON U	NSR 09-010-027	Schiff, H. I.	59	1764
LERC	Jones, W. R., Jr.	GEORGIA INST OF TECH	NAS 3-15383	Winer, W. O.	46	1827
LERC	Priem, R. J.	GEORGIA INST OF TECH	NGL 11-002-083	Zinn, B. T.	41	1842
LERC	Priem, R. J.	GEORGIA INST OF TECH	NGL 11-002-085	Zinn, B. T.	46	1843
LERC	Jones, W. R., Jr.	GEORGIA INST OF TECH	NGR 11-002-133	Winer, W. O.	49	1846
LERC	Kascak, A. F.	GEORGIA INST OF TECH	NGR 11-002-145	Kallfelz, J. M.	49	1847
LERC	Ragsdale, R. G.	GEORGIA INST OF TECH	NGR 11-002-145	Kallfelz, J. M.	49	1847
LERC	Masser, C. C.	GEORGIA INST OF TECH	NGR 11-002-146	Williams, J. R.	49	1848
LERC	Kascak, A. F.	GEORGIA INST OF TECH	NGR 11-002-166	Clement, J. D.	49	1852
LERC	Lalli, V. R.	HARVARD UNIVERSITY	NGR 22-007-172	Brockett, R. W.	45	2233
LERC	Buckley, D. H.	HIRAM COLLEGE	NAS 3-17353	Wheeler, D. R.	13	2952
LERC	Taylor, M. F.	ILL INST OF TECH	NGL 14-004-028	Loran, Z.	41	1885
LERC	Ragsdale, R. G.	ILL INST OF TECH	NGL 14-004-028	Loran, Z.	41	1885
LERC	Ragsdale, R. G.	ILL INST OF TECH	NGR 14-004-008	Weinstein, H.	43	1886
LERC	Britsch, W. R.	IOWA STATE UNIV	NGL 16-002-005	Serovy, G. K.	41	2019
LERC	Sandercock, D. M.	IOWA STATE UNIV	NGR 16-002-036	Serovy, G. K.	41	2021
LERC	Brown, G. V.	KENT STATE UNIV	NGR 36-007-027	Johnson, D. L.	13	2953
LERC	Ashbrook, R. L.	LEHIGH UNIVERSITY	NGL 39-007-007	Kraft, R. W.	47	3053
LERC	Misencik, J. A.	LEHIGH UNIVERSITY	NGR 39-007-067	Wei, R. P.	47	3061
LERC	Smith, G. T.	LEHIGH UNIVERSITY	NGR 39-007-067	Wei, R. P.	47	3061
LERC	Brettwieser, R.	LINFIELD COLLEGE	NGR 38-010-005	Swanson, L. W.	19	3011
LERC	Smith, A. L.	LINFIELD COLLEGE	NGR 38-010-005	Swanson, L. W.	19	3011
LERC	Lalli, V. R.	LOWELL TECH INST	NGR 22-018-006	Burger, P.	45	2245
LERC	Quatinetz, M.	MASS INST OF TECH	NGL 22-009-003	Grant, N. J.	47	2309
LERC	Evvard, J. C.	MASS INST OF TECH	NGL 22-009-383	Kerrebrock, J. L.	41	2326
LERC	Chiarito, P. T.	MASS INST OF TECH	NGR 22-009-339	Witner, E. A.	41	2338
LERC	Kemp, R. H.	MASS INST OF TECH	NGR 22-009-339	Witner, E. A.	41	2338
LERC	Holdeman, J. D.	MASS INST OF TECH	NGR 22-009-378	Fay, J. A.	41	2342
LERC	Baumeister, K. J.	MASS INST OF TECH	NGR 22-009-805	Ingard, K. U.	41	2377
LERC	Rice, E. J.	MASS INST OF TECH	NGR 22-009-805	Ingard, K. U.	41	2377
LERC	Blue, J. W.	MICHIGAN STATE UNIV	NGR 23-004-056	Katyal, O.	13	2416

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LERC	Albers, J. A.	MICHIGAN STATE UNIV	NGR 23-004-068	Foss, J. F.	46	2417
LERC	Luidens, R. W.	MICHIGAN STATE UNIV	NGR 23-004-068	Foss, J. F.	46	2417
LERC	Cunningham, R. E.	MISSISSIPPI STATE U	NGR 25-001-050	Stiffler, A. K.	46	2542
LERC	Fleming, D. P.	MISSISSIPPI STATE U	NGR 25-001-050	Stiffler, A. K.	46	2542
LERC	Neustadter, H. E.	NEW YORK UNIVERSITY	NGR 33-016-197	Hoydysh, W. G.	39	2820
LERC	Fordyce, J. S.	NEW YORK UNIVERSITY	NGR 33-016-197	Hoydysh, W. G.	39	2820
LERC	Ragsdale, R. G.	NO CAROLINA STATE U	NGR 34-002-177	Hassan, H.	13	2910
LERC	Godlewski, M. P.	NO CAROLINA STATE U	NGR 34-002-195	Hauser, J. R.	45	2916
LERC	Meyers, I. T.	NORTHEASTERN UNIV	NAS12-2053		45	2381
LERC	Lad, R. A.	NORTHWESTERN UNIV	NGL 14-007-081	Waber, J. T.	13	1895
LERC	Bambakidis, G.	NORTHWESTERN UNIV	NGL 14-007-081	Waber, J. T.	13	1895
LERC	Anderson, W. J.	NORTHWESTERN UNIV	NGR 14-007-084	Ching, H. S.	46	1899
LERC	Zaretsky, E. V.	NORTHWESTERN UNIV	NGR 14-007-084	Ching, H. S.	46	1899
LERC	Grobman, J. S.	NORTHWESTERN UNIV	NGR 14-007-114	Kovitz, A. A.	41	1900
LERC	Gray, H.	OHIO STATE UNIV	NGL 36-008-051	Beck, F. H.	47	2964
LERC	Heidmann, M. F.	PENNSYLVANIA STATE U	NAS 3-17855	Lakshminarayana, B.	41	3065
LERC	Gelder, T. F.	PENNSYLVANIA STATE U	NAS 3-17855	Lakshminarayana, B.	41	3065
LERC	Britsch, W. R.	PENNSYLVANIA STATE U	NGL 39-009-007	Lakshminarayana, B.	41	3072
LERC	Hirschberg, M. H.	PENNSYLVANIA STATE U	NGR 39-009-034	Zamrik, S. Y.	47	3079
LERC	Priem, R. J.	PENNSYLVANIA STATE U	NGR 39-009-077	Faeth, G. M.	46	3080
LERC	Stone, J. R.	PENNSYLVANIA STATE U	NGR 39-009-270	Arndt, R. E.	41	3092
LERC		PRINCETON UNIVERSITY	NGL 31-001-129	Glassman, I.	12	2642
LERC		PRINCETON UNIVERSITY	NGL 31-001-129	Glassman, I.	12	2642
LERC	Priem, R. J.	PRINCETON UNIVERSITY	NGL 31-001-155	Harrye, D. T.	41	2644
LERC	Lieblein, S.	PRINCETON UNIVERSITY	NGR 31-001-074	Mellor, G. L.	41	2648
LERC	Saule, A. V.	PRINCETON UNIVERSITY	NGR 31-001-074	Mellor, G. L.	41	2648
LERC	Johns, R. H.	PRINCETON UNIVERSITY	NGR 31-001-267	Moon, F. C.	41	2665
LERC	Chamis, C. C.	PRINCETON UNIVERSITY	NGR 31-001-267	Moon, F. C.	41	2665
LERC	Gray, V. H.	PRINCETON UNIVERSITY	NGR 31-001-307	Summerfield, M.	41	2670
LERC	Priem, R. J.	PURDUE UNIVERSITY	NGR 15-005-058	Ehresman, C. M.	46	1998
LERC	Poferl, D. J.	PURDUE UNIVERSITY	NGR 15-005-147	Lecuyer, M. R.	41	2003
LERC	Anderson, B. H.	PURDUE UNIVERSITY	NGR 15-005-162	Hoffman, J. D.	41	2006
LERC	Lad, R. A.	RENSSELAER POLY-NY	NGL 33-018-003	Wiberly, S. E.	47	2832
LERC	Miller, C. D.	RENSSELAER POLY-NY	NGR 33-018-152	Ling, F. F.	47	2837
LERC	Weiss, S.	RENSSELAER POLY-NY	NGR 33-018-152	Ling, F. F.	47	2837
LERC	Lad, R. A.	RICE UNIVERSITY	NGL 44-006-001	Rorschach, H. E.	47	3220
LERC	Dietrich, M. W.	ROSE-HULMAN INST TEC	NAS 3-17357	Coy, J. J.	46	2013
LERC	Colladay, R. S.	STANFORD UNIVERSITY	NAS 3-14336	Kays, W. M.	46	1278
LERC	Alexovich, R.	STANFORD UNIVERSITY	NAS 3-14362	Lusignan, B. B.	45	1279
LERC	Graham, R. W.	STANFORD UNIVERSITY	NGL 05-020-134	Kays, W. M.	46	1304
LERC	Whittenberger, J. D.	STANFORD UNIVERSITY	NGR 05-020-671	Sherby, O. D.	47	1363
LERC	Blankenship, C. P.	STANFORD UNIVERSITY	NGR 05-020-671	Sherby, O. D.	47	1363
LERC	Lad, R. A.	STATE U NY-STONY BRK	NGL 33-015-035	Seigle, L. L.	47	2851
LERC	Levine, S. R.	STATE U NY-STONY BRK	NGR 33-015-160	Seigle, L. L.	47	2864
LERC	Belles, F. E.	STATE U NY-STONY BRK	NGR 33-015-163	Berlad, A. L.	39	2865
LERC	Gordon, S.	STATE U NY-STONY BRK	NGR 33-015-163	Berlad, A. L.	39	2865
LERC	Buckley, D. H.	SYRACUSE UNIVERSITY	NGL 33-022-108	Keller, D. V.	47	2873
LERC	Johnson, R. L.	SYRACUSE UNIVERSITY	NGL 33-022-108	Keller, D. V.	47	2873
LERC	Lad, R. A.	TEMPLE UNIVERSITY	NGR 39-012-024	Labes, M. M.	12	3098
LERC	Fryburg, G. C.	TEMPLE UNIVERSITY	NGR 39-012-024	Labes, M. M.	12	3098
LERC	Priem, R. J.	TENNESSEE TECH U	NGR 43-003-015	Purdy, K. R.	46	3154
LERC	Priem, R. J.	TENNESSEE TECH U	NGR 43-003-015	Purdy, K. R.	46	3154
LERC	Chamis, C. C.	TEXAS A&M UNIVERSITY	NGR 44-001-149	Thornton, H. R.	41	3269
LERC	Sullivan, T. L.	TEXAS A&M UNIVERSITY	NGR 44-001-149	Thornton, H. R.	41	3269
LERC	Priem, R. J.	TULANE UNIVERSITY	NGR 19-002-030	O'Hara, J. C.	46	2115
LERC	Kascak, A. F.	UNIV OF ARIZONA	NGR 03-002-213	Perkins, H. C.	49	1154
LERC	Johnson, R. L.	UNIV CALIF-L ANGELES	NGL 05-007-338	Amstutz, H. C.	47	1492
LERC	Swikert, M. A.	UNIV CALIF-L ANGELES	NGL 05-007-338	Amstutz, H. C.	47	1492

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LERC	Olson, W. T.	UNIV OF CINCINNATI	NGL 36-004-014	Guston, R. L.	99	2984
LERC	Brown, G. V.	UNIV OF CINCINNATI	NGR 36-004-054	Joiner, W. C.	13	2985
LERC	Stewart, W. L.	UNIV OF CINCINNATI	NGR 36-004-055	Tabakoff, W.	46	2986
LERC	Means, J. L.	UNIV OF CINCINNATI	NGR 36-004-055	Tabakoff, W.	46	2986
LERC	Mather, R. F.	UNIV OF CINCINNATI	NGR 36-004-056	Harness, D.	47	2987
LERC	Olson, W. T.	UNIV OF CINCINNATI	NGR 36-004-056	Harness, D.	47	2987
LERC	Prust, H. W., Jr.	UNIV OF CINCINNATI	NGR 36-004-064	Tabakoff, W.	41	2990
LERC	Deissler, R. G.	UNIV COLORADO-BOLDER	NGR 06-003-208	Uberoi, M. S.	41	1673
LERC	Antoine, A. C.	UNIV OF CONNECTICUT	NGR 07-002-058	Wells, A. F.	12	1700
LERC	Easter, R. W.	UNIV OF FLORIDA	NGL 10-005-022	Walker, R. D., Jr.	43	1797
LERC	Lad, R. A.	UNIV OF FLORIDA	NGL 10-005-039	Hren, J. J.	47	1798
LERC	Grimes, H. H.	UNIV OF FLORIDA	NGL 10-005-039	Hren, J. J.	47	1798
LERC	Fordyce, J. S.	UNIV OF FLORIDA	NGL 10-005-049	Schneider, R. T.	49	1799
LERC	Lad, R. A.	UNIV OF FLORIDA	NGL 10-005-080	Hummel, R. E.	47	1800
LERC	Soltis, D. G.	UNIV OF FLORIDA	NGR 10-005-182	Walker, R. D.	42	1806
LERC	Anderson, B. H.	UNIV ILLINOIS-URBANA	NGL 14-005-140	Chow, W. L.	41	1954
LERC	Dorsch, R. G.	UNIV ILLINOIS-URBANA	NGR 14-005-149	Jones, B. G.	46	1961
LERC	Karchmer, A. M.	UNIV ILLINOIS-URBANA	NGR 14-005-177	Jones, B. G.	41	1964
LERC	Marek, C. J.	UNIV ILLINOIS-URBANA	NGR 14-005-193	Strehlow, R. A.	41	1969
LERC	Sanders, W. A.	UNIV OF KENTUCKY	NGL 18-001-042	Leipold, M. H.	47	2074
LERC	Cochran, T. H.	UNIV OF KENTUCKY	NGR 18-001-035	Lienhard, J. H.	13	2075
LERC	Masica, W. J.	UNIV OF KENTUCKY	NGR 18-001-035	Lienhard, J. H.	13	2075
LERC	Patch, R. W.	UNIV MARYLAND-COL PK	NGL 21-002-167	Miller, M. H.	13	2154
LERC	Simoneau, R. J.	UNIV MARYLAND-COL PK	NGR 21-002-344	Sengers, J. V.	12	2185
LERC	Laurence, J. C.	UNIV MARYLAND-COL PK	NGR 21-002-358	Spain, I. L.	49	2190
LERC	Coles, W. D.	UNIV MARYLAND-COL PK	NGR 21-002-358	Spain, I. L.	49	2190
LERC	Coles, W. D.	UNIV MARYLAND-COL PK	NGR 21-002-400	Spain, I.	46	2196
LERC	Laurence, J. C.	UNIV MARYLAND-COL PK	NGR 21-002-400	Spain, I.	46	2196
LERC	Dittmar, J. H.	UNIV OF MASS-AMHERST	NGR 22-010-063	Mani, R.	41	2404
LERC	Freche, J. C.	UNIV MICH-ANN ARBOR	NGL 23-005-005	Wilson, D. J.	47	2448
LERC	Harf, F. H.	UNIV MICH-ANN ARBOR	NGL 23-005-005	Wilson, D. J.	47	2448
LERC	Priem, R. J.	UNIV MICH-ANN ARBOR	NGL 23-005-336	Nicholls, J. A.	46	2452
LERC	Miller, C. D.	UNIV MICH-ANN ARBOR	NGR 23-005-417	Clark, S. K.	41	2460
LERC	Priem, R. J.	UNIV MICH-ANN ARBOR	NGR 23-005-536	Nicholls, J. A.	46	2469
LERC	Stepka, F. S.	U MINN-MNPLS-ST PAUL	NAS 3-13200	Eckert, E. R.	47	2493
LERC	Stephens, J. R.	UNIV OF PITTSBURGH	NGR 39-011-164	Meier, G. H.	47	3117
LERC	Dorsch, R. G.	UNIV OF SOUTHERN CAL	NAS 3-17857	Laufer, J.	41	1600
LERC	Ludwig, L. P.	UNIV TENNESSEE-KNOXV	NGR 43-001-023	Milligan, M. W.	41	3170
LERC	Johnson, R. L.	UNIV TENNESSEE-KNOXV	NGR 43-001-023	Milligan, M. W.	41	3170
LERC	Hady, W. F.	UNIV TENNESSEE-KNOXV	NGR 43-001-127	Milligan, M. W.	42	3176
LERC	Dittmar, J. H.	UNIV TENNESSEE-KNOXV	NGR 43-001-134	Lunsdaine, E.	41	3177
LERC	Saule, A. V.	UNIV TENNESSEE-KNOXV	NGR 43-001-134	Lunsdaine, E.	41	3177
LERC	Dorsch, R. G.	UNIV TENNESSEE-KNOXV	NGR 43-001-135	Maus, J. R.	41	3178
LERC	Willoh, R. G.	UNIV OF TOLEDO	NGR 36-010-024	Leininger, G. G.	49	2997
LERC	Cunningham, R. E.	UNIV OF VIRGINIA	NGL 47-005-050	Gunter, E. J.	46	3471
LERC	Anderson, W. J.	UNIV OF VIRGINIA	NGL 47-005-050	Gunter, E. J.	46	3471
LERC	Lad, R. A.	UNIV OF WASHINGTON	NGL 48-002-004	Mueller, J. I.	47	3531
LERC	Barrett, C. A.	UNIV WISC-MADISON	NAS 3-15085	Beyer, J. B.	47	3564
LERC	Laurence, J. C.	UNIV WISC-MADISON	NGR 50-002-116	Boom, R. W.	47	3586
LERC	Coles, W. D.	UNIV WISC-MADISON	NGR 50-002-116	Boom, R. W.	47	3586
LERC	Smith, G. T.	UNIV WISC-MADISON	NGR 50-002-166	Johnson, M. W., Jr.	49	3590
LERC	Misencik, J. A.	UNIV WISC-MADISON	NGR 50-002-166	Johnson, M. W., Jr.	49	3590
LERC		VANDERBILT UNIVERSITY	NAS 3-8545		49	3180
LERC	Dietrich, D. A.	VANDERBILT UNIVERSITY	NGR 43-002-034	Tatom, J. W.	41	3185
LERC	Luidens, R. W.	VANDERBILT UNIVERSITY	NGR 43-002-034	Tatom, J. W.	41	3185
LERC	Bercaw, R. W.	VIRGINIA POLY INST	NAS 3-14873	Gotow, K.	13	3496
LERC	Brandhorst, H. W.	WAYNE STATE UNIV	NGR 23-006-057	Wang, E. Y.	13	2487
LERC	Bernatowicz, D. T.	WAYNE STATE UNIV	NGR 23-006-057	Wang, E. Y.	13	2487

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
LERC	Feiler, C. E.	WICHITA STATE UNIV	NGR 17-003-018	Eversman, W.	13	2070
LERC	Rice, E. J.	WICHITA STATE UNIV	NGR 17-003-018	Eversman, W.	13	2070
MSFC	Morgan, S. H., Jr.	ALABAMA A&M UNIV	NGR 01-001-007	George, M. C.	13	1000
MSFC	Kent, M. I.	ALABAMA A&M UNIV	NGR 01-001-007	George, M. C.	13	1000
MSFC	Reed, B. R.	ALABAMA A&M UNIV	NGR 01-001-013	Lowsine, L.	41	1001
MSFC	Paludan, T.	ALABAMA A&M UNIV	NGR 01-001-014	Sharma, G. C.	39	1002
MSFC	McDonough, G.	ALABAMA A&M UNIV	NGR 01-001-014	Sharma, G. C.	39	1002
MSFC	Peters, P. N.	ALABAMA A&M UNIV	NGR 01-001-017	George, M. C.	13	1003
MSFC	Kent, M. I.	ALABAMA A&M UNIV	NGR 01-001-018	Manager, M. C.	39	1004
MSFC	Kurtz, R. L.	ALABAMA A&M UNIV	NGR 01-001-020	Lee, C. T.	13	1005
MSFC	Lowrey, D. O.	ALABAMA A&M UNIV	NGR 01-001-021	Weathers, G. D.	46	1006
MSFC	Derington, J. C.	ALABAMA A&M UNIV	NGR 01-001-023	Golden, M. S.	39	1007
MSFC	Smith, O. E.	APPALACHIAN STATE U	NAS 8-29286	Carter, M. C.	21	2884
MSFC	Falls, L. W.	APPALACHIAN STATE U	NAS 8-29286	Carter, M. C.	21	2884
MSFC	Frary, S. G.	ATHENS COLLEGE	NAS 8-28058	McNutt, R. C.	13	1008
MSFC	Williams, J. R.	ATHENS COLLEGE	NAS 8-28058	McNutt, R. C.	13	1008
MSFC	Jones, C. S.	AUBURN UNIV-AUBURN	NAS 8-20163	Nagle, H. T., Jr.	45	1009
MSFC	Doran, B. J.	AUBURN UNIV-AUBURN	NAS 8-20163	Nagle, H. T., Jr.	45	1009
MSFC	Emens, F. H.	AUBURN UNIV-AUBURN	NAS 8-20765	Irwin, J. D.	45	1010
MSFC	Maynard, E.	AUBURN UNIV-AUBURN	NAS 8-20765	Irwin, J. D.	45	1010
MSFC	Mixon, W. R.	AUBURN UNIV-AUBURN	NAS 8-24818	Graf, E. R.	45	1011
MSFC	Saunders, G. H.	AUBURN UNIV-AUBURN	NAS 8-24818	Graf, E. R.	45	1011
MSFC	Naumann, R. J.	AUBURN UNIV-AUBURN	NAS 8-26190	Harwell, K. E.	11	1012
MSFC	Clifton, S.	AUBURN UNIV-AUBURN	NAS 8-26190	Harwell, K. E.	11	1012
MSFC	Thomas, L. J.	AUBURN UNIV-AUBURN	NAS 8-26193	Honnell, M. A.	45	1013
MSFC	Lowery, D. O.	AUBURN UNIV-AUBURN	NAS 8-26193	Honnell, M. A.	45	1013
MSFC	Jones, B. P.	AUBURN UNIV-AUBURN	NAS 8-26579	Vachon, R. I.	13	1014
MSFC	Miller, E. R.	AUBURN UNIV-AUBURN	NAS 8-26579	Vachon, R. I.	13	1014
MSFC	Brown, H. E.	AUBURN UNIV-AUBURN	NAS 8-26580	Boland, J. S.	45	1015
MSFC	Polites, M. E.	AUBURN UNIV-AUBURN	NAS 8-26580	Boland, J. S.	45	1015
MSFC	Graves, J. R.	AUBURN UNIV-AUBURN	NAS 8-26752	Honnell, M. A.	45	1016
MSFC	Lanier, J. R.	AUBURN UNIV-AUBURN	NAS 8-26752	Honnell, M. A.	45	1016
MSFC	Yearwood, H. E.	AUBURN UNIV-AUBURN	NAS 8-26930	Irwin, J. D.	45	1017
MSFC	White, J. B.	AUBURN UNIV-AUBURN	NAS 8-26930	Irwin, J. D.	45	1017
MSFC	Hethcoat, J. P.	AUBURN UNIV-AUBURN	NAS 8-27664	Bennett, A. G.	42	1018
MSFC	Borelli, M. T.	AUBURN UNIV-AUBURN	NAS 8-27827	Russell, D. W.	45	1019
MSFC	Carroll, S. N.	AUBURN UNIV-AUBURN	NAS 8-27827	Russell, D. W.	45	1019
MSFC	Justice, D. W.	AUBURN UNIV-AUBURN	NAS 8-28110	Cochran, J. E.	42	1020
MSFC	Waites, H. B.	AUBURN UNIV-AUBURN	NAS 8-28110	Cochran, J. E.	42	1020
MSFC	Valley, D. P.	AUBURN UNIV-AUBURN	NAS 8-28262	Phillips, C. L.	45	1021
MSFC	Justice, D. W.	AUBURN UNIV-AUBURN	NAS 8-28262	Phillips, C. L.	45	1021
MSFC	Naumann, R. J.	AUBURN UNIV-AUBURN	NAS 8-28366	Fitzpatrick, P. M.	13	1022
MSFC	Holland, R. H.	AUBURN UNIV-AUBURN	NAS 8-28366	Fitzpatrick, P. M.	13	1022
MSFC	Ellsworth, T. D.	AUBURN UNIV-AUBURN	NAS 8-29852	Boland, J. S., III	49	1023
MSFC	Wise, R. L.	AUBURN UNIV-AUBURN	NAS 8-29852	Boland, J. S., III	49	1023
MSFC	Jones, J. B.	CALIF INST OF TECH	NAS 8-26844	Stone, E. C.	11	1183
MSFC	Dabbs, J. R.	CALIF INST OF TECH	NAS 8-26844	Stone, E. C.	11	1183
MSFC	Talley, D.	CALIF INST OF TECH	NAS 8-27403	Garmire, G. P.	11	1184
MSFC	Jones, J. B.	CALIF INST OF TECH	NAS 8-27403	Garmire, G. P.	11	1184
MSFC	Cochran, J.	CALIF INST OF TECH	NAS 8-27978	Stone, E. C.	11	1185
MSFC	Krome, H. O.	CALIF INST OF TECH	NAS 8-27978	Stone, E. C.	11	1185
MSFC	Reichman, E. J.	CALIF INST OF TECH	NAS 8-28028	Zirin, H.	11	1186
MSFC	Schwindt, P. J.	CALIF INST OF TECH	NAS 8-28028	Zirin, H.	11	1186
MSFC	Strong, J. A.	CALIF INST OF TECH	NAS 8-28046	Acosta, A. J.	46	1187
MSFC	Gross, L. A.	CALIF INST OF TECH	NAS 8-28046	Acosta, A. J.	46	1187
MSFC	Potter, R. A.	CALIF INST OF TECH	NAS 8-28573	Garmire, G.	11	1188
MSFC	Jones, J. B.	CALIF INST OF TECH	NAS 8-28573	Garmire, G.	11	1188
MSFC	Strong, J. S.	CALIF INST OF TECH	NAS 8-29313	Acosta, A. T.	46	1189

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MSFC	Gross, L. A.	CALIF INST OF TECH	NAS 8-29313	Acosta, A. T.	46	1189
MSFC	Inman, R. A.	CARNEGIE-MELLON UNIV	NAS 8-28737	Casasent, D.	45	3034
MSFC	Inman, R. I.	CARNEGIE-MELLON UNIV	NAS 8-28737	Casasent, D.	45	3034
MSFC	Miller, E. R.	CASE WESTERN RESERVE	NAS 8-29707	Bidelman, W.	11	2928
MSFC	Wdowial, T. A.	CASE WESTERN RESERVE	NAS 8-29707	Bidelman, W.	11	2928
MSFC	Brown, S. C.	CITY COLLEGE OF N Y	NAS 8-29616	Pierson, W. T.	33	2710
MSFC	Fichtl, G. H.	CITY COLLEGE OF N Y	NAS 8-29616	Pierson, W. T.	33	2710
MSFC	Lacy, L. L.	CLARK UNIVERSITY	NAS 8-28900	McEvoy, J. P.	13	2215
MSFC	Urban, E. W.	CLARK UNIVERSITY	NAS 8-28900	McEvoy, J. P.	13	2215
MSFC	Bannister, T. C.	COLORADO SCH OF MINE	NAS 8-30511	Stermole, F. J.	43	1621
MSFC	Richard, B.	COLORADO SCH OF MINE	NAS 8-30511	Stermole, F. J.	43	1621
MSFC	Huffaker, R. M.	COLORADO STATE UNIV	NAS 8-26234	Karaki, S.	41	1629
MSFC	Jones, I. P.	COLORADO STATE UNIV	NAS 8-26234	Karaki, S.	41	1629
MSFC	Miller, C.	COLORADO STATE UNIV	NAS 8-26551	Childs, D. W.	46	1630
MSFC	Turner, R. E.	COLORADO STATE UNIV	NAS 8-28590	Sadeh, W. Z.	39	1631
MSFC	Cummings, R. E.	COLORADO STATE UNIV	NAS 8-28590	Sadeh, W. Z.	39	1631
MSFC	Turner, R. E.	COLORADO STATE UNIV	NAS 8-28655	Marschner, B. W.	39	1632
MSFC	Sloan, J. C.	COLORADO STATE UNIV	NAS 8-28655	Marschner, B. W.	39	1632
MSFC	Camp, D. W.	COLORADO STATE UNIV	NAS 8-29583	Cermak, J. E.	44	1633
MSFC	Walker, R. W.	COLORADO STATE UNIV	NAS 8-29583	Cermak, J. E.	44	1633
MSFC	Potter, R. A.	COLUMBIA UNIVERSITY	NAS 8-26841	Novick, R.	11	2720
MSFC	Neuschafer, R. W.	COLUMBIA UNIVERSITY	NAS 8-27405	Angel, J. R.	11	2721
MSFC	Lavender, R. E.	COLUMBIA UNIVERSITY	NAS 8-27970	Novick, R.	11	2722
MSFC	Jones, J. B.	COLUMBIA UNIVERSITY	NAS 8-27970	Novick, R.	11	2722
MSFC	Jones, J. B.	COLUMBIA UNIVERSITY	NAS 8-29702	Novick, R.	11	2723
MSFC	Neuschafer, R. W.	COLUMBIA UNIVERSITY	NAS 8-29702	Novick, R.	11	2723
MSFC	Neuschafer, R. W.	COLUMBIA UNIVERSITY	NAS 8-29703	Angel, J. R.	31	2724
MSFC	Jones, J. B.	COLUMBIA UNIVERSITY	NAS 8-29703	Angel, J. R.	31	2724
MSFC	Daniels, J. L., Jr.	DILLARD UNIVERSITY	NGR 19-015-001	Rogers, R.	39	2079
MSFC	Chisolm, W. L., Jr.	DUDLEY OBSERVATORY	NAS 8-24865	Weinberg, J. L.	11	2784
MSFC	Krupnick, A. C.	GEORGETOWN UNIV	NAS 8-29778	Leise, E. M.	51	1765
MSFC	Allen, R. E.	GEORGETOWN UNIV	NAS 8-29778	Leise, E. M.	51	1765
MSFC		GEORGIA INST OF TECH	NAS 8-11242		13	1828
MSFC		GEORGIA INST OF TECH	NAS 8-11389		13	1829
MSFC	Smith, R. E.	GEORGIA INST OF TECH	NAS 8-26658	Justus, C. G.	13	1830
MSFC	Fichtl, G. H.	GEORGIA INST OF TECH	NAS 8-26658	Justus, C. G.	13	1830
MSFC	Burke, H. D.	GEORGIA INST OF TECH	NAS 8-27375	Shackelford, R. G.	42	1831
MSFC	Kerr, J. H.	GEORGIA INST OF TECH	NAS 8-27375	Shackelford, R. G.	42	1831
MSFC	Kerr, J. H.	GEORGIA INST OF TECH	NAS 8-27681	Shackelford, R. G.	13	1832
MSFC	Pitts, E. H.	GEORGIA INST OF TECH	NAS 8-27681	Shackelford, R. G.	13	1832
MSFC	Smith, H. F.	GEORGIA INST OF TECH	NAS 8-28148	Walsh, J. R.	45	1833
MSFC	Kerr, J. H.	GEORGIA INST OF TECH	NAS 8-28148	Walsh, J. R.	45	1833
MSFC	Kerr, J. H.	GEORGIA INST OF TECH	NAS 8-28215	McSweeney, A.	45	1834
MSFC	Smith, H. F.	GEORGIA INST OF TECH	NAS 8-28215	McSweeney, A.	45	1834
MSFC	Smith, H. F.	GEORGIA INST OF TECH	NAS 8-28591	Callor, W. R.	45	1835
MSFC	Kerr, J. H.	GEORGIA INST OF TECH	NAS 8-28591	Callor, W. R.	45	1835
MSFC	Hasemeyer, E. A.	GEORGIA INST OF TECH	NAS 8-28735	Brown, J. L.	47	1836
MSFC	McPherson, W. B.	GEORGIA INST OF TECH	NAS 8-28735	Brown, J. L.	47	1836
MSFC	Pitts, E. H.	GEORGIA INST OF TECH	NAS 8-29860	Hart, R. K.	45	1837
MSFC	Kerr, J. H.	GEORGIA INST OF TECH	NAS 8-29860	Hart, R. K.	45	1837
MSFC	McKannan, E. C.	GRAMBLING COLLEGE	NGR 19-011-009	Terrell, J.	13	2082
MSFC	Kroes, R. L.	GRAMBLING COLLEGE	NGR 19-011-016	Narasimhamurty H, A.	13	2086
MSFC	Duncan, B. J.	JOHNS HOPKINS UNIV	NGR 21-001-024	Gotwols, B. L.	11	2133
MSFC	Baughner, C. R.	JOHNS HOPKINS UNIV	NGR 21-001-024	Gotwols, B. L.	11	2133
MSFC	Snyder, R. S.	LEHIGH UNIVERSITY	NAS 8-28654	Vanderhoff, J. W.	12	3050
MSFC	Cantrell, J. P.	LEHIGH UNIVERSITY	NAS 8-28654	Vanderhoff, J. W.	12	3050
MSFC		LA STATE U-BAT ROUGE	NAS 8-20003		72	2090
MSFC	McDonough, G. F.	LA STATE U-BAT ROUGE	NAS 8-29012	Modlin, D. G., Jr.	39	2091

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MSFC	Daniels, J. L., Jr.	LA STATE U-BAT ROUGE	NAS 8-29012	Modlin, D. G., Jr.	39	2091
MSFC	Kent, M. I.	LA STATE U-BAT ROUGE	NGL 19-001-097	Whitehurst, C. A.	39	2097
MSFC	Daniels, J. L., Jr.	LA STATE U-NEW ORLNS	NAS 8-28955	Saussy, G. A.	39	2101
MSFC	McDonough, G. F.	LA STATE U-NEW ORLNS	NAS 8-28955	Saussy, G. A.	39	2101
MSFC	McDonough, G. F.	LOYOLA UNIV-LA	NAS 8-28957	Christman, J. F.	39	2105
MSFC	Smollen, J. W., III	LOYOLA UNIV-LA	NAS 8-28957	Christman, J. F.	39	2105
MSFC		MASS INST OF TECH	NAS 8-2481		42	2269
MSFC	Hasemyer, E. A.	MASS INST OF TECH	NAS 8-24364	Masubuchi, K.	49	2270
MSFC	Parks, P. G.	MASS INST OF TECH	NAS 8-24364	Masubuchi, K.	49	2270
MSFC	Siler, H. L.	MASS INST OF TECH	NAS 8-24365	Masubuchi, K.	46	2271
MSFC	Poorman, R. M.	MASS INST OF TECH	NAS 8-24365	Masubuchi, K.	46	2271
MSFC	Reynolds, J. M.	MASS INST OF TECH	NAS 8-24585	Lark, G. C.	41	2272
MSFC	Fields, S.	MASS INST OF TECH	NAS 8-24585	Lark, G. C.	41	2272
MSFC	Potter, R. A.	MASS INST OF TECH	NAS 8-26839	Bradt, H.	11	2273
MSFC	Power, J. A.	MASS INST OF TECH	NAS 8-26840	Lewin, W. H.	11	2274
MSFC		MASS INST OF TECH	NAS 8-27624		42	2275
MSFC	Randall, J. L.	MASS INST OF TECH	NAS 8-27733	Hoversten, E. V.	13	2276
MSFC	Marrero, P. J.	MASS INST OF TECH	NAS 8-27733	Hoversten, E. V.	13	2276
MSFC	Gustin, R. A.	MASS INST OF TECH	NAS 8-27972	Bradt, H. V.	11	2277
MSFC	Bodie, W. G.	MASS INST OF TECH	NAS 8-27972	Bradt, H. V.	11	2277
MSFC	Jordan, W.	MASS INST OF TECH	NAS 8-27975	Lewin, W. H.	11	2278
MSFC	Jones, J. B.	MASS INST OF TECH	NAS 8-27975	Lewin, W. H.	11	2278
MSFC	Vallely, D. P.	MASS INST OF TECH	NAS 8-28055	Sheridan, T. B.	46	2279
MSFC	Counter, D. N.	MASS INST OF TECH	NAS 8-28055	Sheridan, T. B.	46	2279
MSFC	Snyder, R. S.	MASS INST OF TECH	NAS 8-28189	Gatos, H. C.	47	2280
MSFC	Adams, W. R.	MASS INST OF TECH	NAS 8-28306	Gatos, H. C.	19	2281
MSFC	Johnston, M. H.	MASS INST OF TECH	NAS 8-28306	Gatos, H. C.	19	2281
MSFC	Scott, F. E.	MASS INST OF TECH	NAS 8-28411	Sinskey, A. J.	31	2282
MSFC	Beyerle, F. J.	MASS INST OF TECH	NAS 8-28411	Sinskey, A. J.	31	2282
MSFC	Hoppes, R. V.	MASS INST OF TECH	NAS 8-28732	Masubuchi, K.	46	2283
MSFC	Poorman, R. M.	MASS INST OF TECH	NAS 8-28732	Masubuchi, K.	46	2283
MSFC	Counter, D. N.	MASS INST OF TECH	NAS 8-29187	Soosar, K.	46	2284
MSFC	Clarke, W. D.	MASS INST OF TECH	NAS 8-29187	Soosar, K.	46	2284
MSFC	Thornton, W. G.	MASS INST OF TECH	NAS 8-29724	Woodin, A.	46	2285
MSFC	Cline, S.	MASS INST OF TECH	NAS 8-29724	Woodin, A.	46	2285
MSFC	Gainis, B. J.	MASS INST OF TECH	NAS12-2033	Gilmore, J. P.	49	2306
MSFC	Jones, C. S.	MASS INST OF TECH	NAS12-2033	Gilmore, J. P.	49	2306
MSFC	Dalins, I.	MASS INST OF TECH	NGL 22-009-125	Gatos, H. C.	13	2318
MSFC	Stern, H. E.	MASS INST OF TECH	NGL 22-009-125	Gatos, H. C.	13	2318
MSFC	Snyder, R. S.	MASS INST OF TECH	NGR 22-009-517	Gatos, H. C.	12	2345
MSFC		MISSISSIPPI STATE U	NAS 8-11497		72	2532
MSFC	Guynes, B. V.	MISSISSIPPI STATE U	NAS 8-21377	McDaniel, W. L., Jr.	45	2533
MSFC	Vallely, D. P.	MISSISSIPPI STATE U	NAS 8-21377	McDaniel, W. L., Jr.	45	2533
MSFC	Kennedy, B. W.	MISSISSIPPI STATE U	NAS 8-26749	Gassaway, J. D.	49	2534
MSFC	Hollis, B. R., Jr.	MISSISSIPPI STATE U	NAS 8-26749	Gassaway, J. D.	49	2534
MSFC	Glaese, J. R.	MISSISSIPPI STATE U	NAS 8-28833	Thompson, J. F.	41	2535
MSFC	Buchanan, H. J.	MISSISSIPPI STATE U	NAS 8-28833	Thompson, J. F.	41	2535
MSFC	Daniels, J. L., Jr.	MISSISSIPPI STATE U	NAS 8-29036	McKee, J. C., Jr.	39	2536
MSFC	McDonough, G. F.	MISSISSIPPI STATE U	NAS 8-29036	McKee, J. C., Jr.	39	2536
MSFC	Balch, J.	MISSISSIPPI STATE U	NGL 25-001-028	Bouchillon, C. W.	59	2539
MSFC	Kent, M. I.	MISSISSIPPI STATE U	NGL 25-001-032	Bouchillon, C. W.	99	2540
MSFC	Kent, M. I.	MISSISSIPPI STATE U	NGL 25-001-040	Brown, L. R.	39	2541
MSFC	Urban, E. W.	MONTANA STATE UNIV	NAS 8-28202	Hendricks, J. B.	13	2585
MSFC	Decher, R.	MONTANA STATE UNIV	NAS 8-28202	Hendricks, J. B.	13	2585
MSFC	Smith, R. E.	MOREHOUSE COLLEGE	NGL 11-008-001	Meredeth, C. W.	12	1857
MSFC	Kent, M. I.	MOREHOUSE COLLEGE	NGL 11-008-001	Meredeth, C. W.	12	1857
MSFC	Shriver, E. L.	MOREHOUSE COLLEGE	NGR 11-008-002	Spight, C.	13	1858
MSFC	Fichtl, G. H.	NEW YORK UNIVERSITY	NAS 8-29578	Pierson, W. J.	33	2807

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MSFC	Brown, S. C.	NEW YORK UNIVERSITY	NAS 8-29578	Pierson, W. J.	33	2807
MSFC	Fichtl, G.	PENNSYLVANIA STATE U	NAS 8-21140	Blackadar, A. K.	31	3067
MSFC	Kautman, J.	PENNSYLVANIA STATE U	NAS 8-21140	Blackadar, A. K.	31	3067
MSFC	Fichtl, G. H.	PENNSYLVANIA STATE U	NAS 8-27334		31	3068
MSFC	Roberts, W. T.	PENNSYLVANIA STATE U	NGR 39-009-132	Quinn, R. G.	13	3082
MSFC	Gary, A.	PORTLAND STATE UNIV	NAS 8-29256	Gurevitch, M.	13	3021
MSFC	Craven, P.	PORTLAND STATE UNIV	NAS 8-29256	Gurevitch, M.	13	3021
MSFC		PRINCETON UNIVERSITY	NAS 8-11101		12	2632
MSFC	Reichmann, E.	PRINCETON UNIVERSITY	NAS 8-23071	Morton, D. C.	11	2633
MSFC	Zwiener, J.	PRINCETON UNIVERSITY	NAS 8-23071	Morton, D. C.	11	2633
MSFC	Spangler, D. E.	PRINCETON UNIVERSITY	NAS 8-27687	Danielson, R. E.	11	2634
MSFC	Bordelon, C. S.	PRINCETON UNIVERSITY	NAS 8-27687	Danielson, R. E.	11	2634
MSFC	Clever, W. W., III	PRINCETON UNIVERSITY	NAS 8-28577	Dowell, E. H.	41	2635
MSFC	Beranik, R. G.	PRINCETON UNIVERSITY	NAS 8-28577	Dowell, E. H.	41	2635
MSFC	Spangler, D. E.	PRINCETON UNIVERSITY	NAS 8-29239	Danielson, R. E.	45	2636
MSFC	Bordelon, C. S.	PRINCETON UNIVERSITY	NAS 8-29239	Danielson, R. E.	45	2636
MSFC	Hamilton, E. C.	PRINCETON UNIVERSITY	NGR 31-001-276	Lowrance, J. L.	11	2668
MSFC	Digesu, F. E.	PRINCETON UNIVERSITY	NGR 31-001-276	Lowrance, J. L.	11	2668
MSFC	Moss, J. D.	PURDUE UNIVERSITY	NAS 8-24015	Schoenhals, R. J.	49	1988
MSFC	Davidson, M. C.	RENSSELAER POLY-NY	NAS 8-26146	Wiedemeier, H. T.	13	2830
MSFC	Arnett, G. M.	RENSSELAER POLY-NY	NAS 8-26146	Wiedemeier, H. T.	13	2830
MSFC	Davidson, M. C.	RENSSELAER POLY-NY	NAS 8-28307	Wiedemeier, H.	19	2831
MSFC	Adams, W. R.	RENSSELAER POLY-NY	NAS 8-28307	Wiedemeier, H.	19	2831
MSFC	Urban, E. W.	SO CAROLINA ST COL	NGR 41-006-001	Payne, J. E.	13	3140
MSFC	Peters, P. N.	SO DAKOTA SCHL MINES	NAS 8-28060	Weilzenkamp, L. A.	13	3146
MSFC	Jones, J.	SO UNIV-BATON ROUGE	NGR 19-005-003	Johnson, J. A.	13	2107
MSFC	Kent, M. I.	SO UNIV-BATON ROUGE	NGR 19-005-008	Watson, M. M.	43	2109
MSFC	McDonnough, G.	SO UNIV-NEW ORLEANS	NGR 19-014-001	Lucas, E. C.	39	2111
MSFC	Decher, R.	STANFORD UNIVERSITY	NAS 8-25705	Everitt, C.	11	1290
MSFC	Decher, R.	STANFORD UNIVERSITY	NAS 8-27333	Debra, D. B.	13	1291
MSFC	Jones, R. E.	STANFORD UNIVERSITY	NAS 8-27333	Debra, D. B.	13	1291
MSFC	Power, J. A.	STANFORD UNIVERSITY	NAS 8-27406	Hofstadter, R.	11	1292
MSFC	Potter, R. A.	STANFORD UNIVERSITY	NGR 05-020-019	Fairbanks, W. M.	13	1323
MSFC	Roberts, W. T.	STANFORD UNIVERSITY	NGR 05-020-579	Helliwell, R. A.	39	1350
MSFC	Wojtalik, F. S.	STANFORD UNIVERSITY	NGR 05-020-659	Lusignan, B. B.	45	1360
MSFC	Weber, F. H.	STATE UNIV NY-BUFFAL	NAS 8-28264	Schmitt, E.	45	2841
MSFC	Allen, R. E.	STATE UNIV NY-BUFFAL	NAS 8-29745	Bigazzi, P. E.	13	2842
MSFC	Krupnick, A. C.	STATE UNIV NY-BUFFAL	NAS 8-29745	Bigazzi, P. E.	13	2842
MSFC	Reinbolt, E. J.	SWARTHMORE COLLEGE	NAS 8-26927	Schutz, V. K.	49	3096
MSFC	Rasdall, J. L.	SWARTHMORE COLLEGE	NAS 8-26927	Schutz, V. K.	49	3096
MSFC	Dalins, I.	TALLADEGA COLLEGE	NGR 01-007-001	George, M. C.	13	1029
MSFC	Horton, J.	TALLADEGA COLLEGE	NGR 01-007-004	Morrison, R. A.	13	1030
MSFC	Rull, R.	TEXAS A&M UNIVERSITY	NAS 8-26379	Porter, W. A.	13	3245
MSFC	Nowakowski, M. F.	TEXAS A&M UNIVERSITY	NAS 8-26379	Porter, W. A.	13	3245
MSFC	Vaughn, W. W.	TEXAS A&M UNIVERSITY	NAS 8-26751	Scoggins, J. R.	31	3246
MSFC	Turner, R. E.	TEXAS A&M UNIVERSITY	NAS 8-26751	Scoggins, J. R.	31	3246
MSFC	Camp, D. W.	TEXAS A&M UNIVERSITY	NAS 8-29582	Brundidge, K. C.	31	3247
MSFC	Fichtl, G. H.	TEXAS A&M UNIVERSITY	NAS 8-29582	Brundidge, K. C.	31	3247
MSFC	McDonough, G. F.	TULANE UNIVERSITY	NAS 8-29026	Hidalgo, J. V.	39	2112
MSFC	Daniels, J. L., Jr.	TULANE UNIVERSITY	NAS 8-29026	Hidalgo, J. V.	39	2112
MSFC	Kent, M.	TUSKEGEE INSTITUTE	NGR 01-005-003	Reams, F. M.	13	1031
MSFC	Bannister, T. C.	TUSKEGEE INSTITUTE	NGR 01-005-003	Reams, F. M.	13	1031
MSFC	Guest, S. H.	TUSKEGEE INSTITUTE	NGR 01-005-010	Lenzo, C. S.	41	1032
MSFC	Kent, M. I.	TUSKEGEE INSTITUTE	NGR 01-005-010	Lenzo, C. S.	41	1032
MSFC	Krupnick, A. C.	TUSKEGEE INSTITUTE	NGR 01-005-012	Terrill, G. R.	45	1033
MSFC	Bannister, T. C.	UNIV ALA-HUNTSVILLE	NAS 8-24612	Davis, J. H.	13	1036
MSFC	Kroes, R.	UNIV ALA-HUNTSVILLE	NAS 8-24612	Davis, J. H.	13	1036
MSFC	Parnell, T. A.	UNIV ALA-HUNTSVILLE	NAS 8-24908	Guenther, G. A.	11	1037

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MSFC	Oran, W. A.	UNIV ALA-HUNTSVILLE	NAS 8-24908	Guenther, G. A.	11	1037
MSFC	Oran, W.	UNIV ALA-HUNTSVILLE	NAS 8-24953	Gregory, J. C.	13	1038
MSFC	Parnell, T. A.	UNIV ALA-HUNTSVILLE	NAS 8-24953	Gregory, J. C.	13	1038
MSFC	Naumann, R.	UNIV ALA-HUNTSVILLE	NAS 8-25055	Todd, F. C.	13	1039
MSFC	Espy, P.	UNIV ALA-HUNTSVILLE	NAS 8-25055	Todd, F. C.	13	1039
MSFC	Jones, B. P.	UNIV ALA-HUNTSVILLE	NAS 8-25101	Wu, S. T.	13	1040
MSFC	Hagyard, M.	UNIV ALA-HUNTSVILLE	NAS 8-25101	Wu, S. T.	13	1040
MSFC	Costes, N. C.	UNIV ALA-HUNTSVILLE	NAS 8-25102	Chung, T. J.	13	1041
MSFC	Peasley, Q. D.	UNIV ALA-HUNTSVILLE	NAS 8-25102	Chung, T. J.	13	1041
MSFC	Kroes, R.	UNIV ALA-HUNTSVILLE	NAS 8-25120	Davis, J. H.	47	1042
MSFC	Devries, L. L.	UNIV ALA-HUNTSVILLE	NAS 8-25750	Wu, S. T.	49	1043
MSFC	Smith, R. E.	UNIV ALA-HUNTSVILLE	NAS 8-25750	Wu, S. T.	49	1043
MSFC	Akens, D. S.	UNIV ALA-HUNTSVILLE	NAS 8-26055	Beltz, J. S.	73	1044
MSFC	Sorensen, V. C.	UNIV ALA-HUNTSVILLE	NAS 8-26055	Beltz, J. S.	73	1044
MSFC	Ruff, R. C.	UNIV ALA-HUNTSVILLE	NAS 8-26773	Todd, F. C.	21	1045
MSFC	Kroes, R. L.	UNIV ALA-HUNTSVILLE	NAS 8-26793	Davis, J. H.	13	1046
MSFC	Lacy, L. L.	UNIV ALA-HUNTSVILLE	NAS 8-26793	Davis, J. H.	13	1046
MSFC	Stern, H. E.	UNIV ALA-HUNTSVILLE	NAS 8-26795	McCarty, V.	39	1047
MSFC	Dalins, I.	UNIV ALA-HUNTSVILLE	NAS 8-26795	McCarty, V.	39	1047
MSFC	Reese, O. Y.	UNIV ALA-HUNTSVILLE	NAS 8-26991	Roy, U.	47	1048
MSFC	Jones, B. P.	UNIV ALA-HUNTSVILLE	NAS 8-27181	Horner, J. M.	13	1049
MSFC	Parnell, T. A.	UNIV ALA-HUNTSVILLE	NAS 8-27336	Gregory, J. C.	13	1050
MSFC	Oran, W. A.	UNIV ALA-HUNTSVILLE	NAS 8-27336	Gregory, J. C.	13	1050
MSFC	Young, R. L.	UNIV ALA-HUNTSVILLE	NAS 8-27792	Chung, T. J.	21	1051
MSFC	Zimmerman, C. R.	UNIV ALA-HUNTSVILLE	NAS 8-27792	Chung, T. J.	21	1051
MSFC	Lacy, L. L.	UNIV ALA-HUNTSVILLE	NAS 8-27809	Otto, G. H.	13	1052
MSFC	Urban, E. W.	UNIV ALA-HUNTSVILLE	NAS 8-27809	Otto, G. H.	13	1052
MSFC	Peters, P. N.	UNIV ALA-HUNTSVILLE	NAS 8-28071	Gregory, J. G.	13	1053
MSFC	Hagyard, M.	UNIV ALA-HUNTSVILLE	NAS 8-28097	Wu, S. T.	11	1054
MSFC	Jones, B. P.	UNIV ALA-HUNTSVILLE	NAS 8-28097	Wu, S. T.	11	1054
MSFC	Aldrich, B. R.	UNIV ALA-HUNTSVILLE	NAS 8-28112	Walter, H.	47	1055
MSFC	Boese, A.	UNIV ALA-HUNTSVILLE	NAS 8-28112	Walter, H.	47	1055
MSFC	Smith, R. E.	UNIV ALA-HUNTSVILLE	NAS 8-28248	Hermann, R.	42	1056
MSFC	Devries, L. L.	UNIV ALA-HUNTSVILLE	NAS 8-28248	Hermann, R.	42	1056
MSFC	Reed, T. G.	UNIV ALA-HUNTSVILLE	NAS 8-28249	Shih, C. C.	46	1057
MSFC	Wilhold, G. A.	UNIV ALA-HUNTSVILLE	NAS 8-28249	Shih, C. C.	46	1057
MSFC	Adams, W. R.	UNIV ALA-HUNTSVILLE	NAS 8-28304	Walter, H. U.	19	1058
MSFC	Bannister, T. C.	UNIV ALA-HUNTSVILLE	NAS 8-28304	Walter, H. U.	19	1058
MSFC	Strong, J. S.	UNIV ALA-HUNTSVILLE	NAS 8-28512	Rogers, J. G.	69	1059
MSFC	Watters, H. H.	UNIV ALA-HUNTSVILLE	NAS 8-28512	Rogers, J. G.	69	1059
MSFC	Hodges, B.	UNIV ALA-HUNTSVILLE	NAS 8-28545	Polge, R. J.	13	1060
MSFC	Wesson, R. L.	UNIV ALA-HUNTSVILLE	NAS 8-28545	Polge, R. J.	13	1060
MSFC	Wilhold, G. A.	UNIV ALA-HUNTSVILLE	NAS 8-28588	Pao, S. P.	46	1061
MSFC	Jones, J. H.	UNIV ALA-HUNTSVILLE	NAS 8-28588	Pao, S. P.	46	1061
MSFC	Allums, S. L.	UNIV ALA-HUNTSVILLE	NAS 8-28736	Shih, C. C.	46	1062
MSFC	Hastings, L. J.	UNIV ALA-HUNTSVILLE	NAS 8-28736	Shih, C. C.	46	1062
MSFC	Wills, F. D.	UNIV ALA-HUNTSVILLE	NAS 8-28954	Egliitis, A.	13	1063
MSFC	Decher, R.	UNIV ALA-HUNTSVILLE	NAS 8-29316	Karr, G. R.	13	1064
MSFC	Urban, E.	UNIV ALA-HUNTSVILLE	NAS 8-29316	Karr, G. R.	13	1064
MSFC	West, G. S., Jr.	UNIV ALA-HUNTSVILLE	NAS 8-29317	Rao, G. L.	49	1065
MSFC	Smith, R. E.	UNIV ALA-HUNTSVILLE	NAS 8-29317	Rao, G. L.	49	1065
MSFC	Smith, R. E.	UNIV ALA-HUNTSVILLE	NAS 8-29501	Wu, S. T.	13	1066
MSFC	Tellries, H. B.	UNIV ALA-HUNTSVILLE	NAS 8-29501	Wu, S. T.	13	1066
MSFC	Zwiener, J.	UNIV ALA-HUNTSVILLE	NAS 8-29542	Castle, J. G.	47	1067
MSFC	Davidson, M. C.	UNIV ALA-HUNTSVILLE	NAS 8-29542	Castle, J. G.	47	1067
MSFC	Smith, R. E.	UNIV ALA-HUNTSVILLE	NAS 8-29543	Wu, S. T.	13	1068
MSFC	Davidson, M. C.	UNIV ALA-HUNTSVILLE	NAS 8-29650	Walter, H. U.	13	1069
MSFC	Zwiener, Z. M.	UNIV ALA-HUNTSVILLE	NAS 8-29650	Walter, H. U.	13	1069

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MSFC	Wilhold, G. A.	UNIV ALA-HUNTSVILLE	NAS 8-30159	Shih, C. C.	46	1070
MSFC	Reed, T. G.	UNIV ALA-HUNTSVILLE	NAS 8-30159	Shih, C. C.	46	1070
MSFC	Hamby, H. G.	UNIV ALA-HUNTSVILLE	NAS 8-30216		39	1071
MSFC	Bensko, J.	UNIV ALA-HUNTSVILLE	NAS 8-30216		39	1071
MSFC	Lacy, L. L.	UNIV ALA-HUNTSVILLE	NAS 8-30244	Otto, G.	13	1072
MSFC	Urban, E. W.	UNIV ALA-HUNTSVILLE	NAS 8-30244	Otto, G.	13	1072
MSFC	Kent, M. I.	UNIV ALA-HUNTSVILLE	NGL 01-008-001	Rush, J. E.	99	1073
MSFC		UNIV ALA-TUSCALOOSA	NAS 8-1517		42	1075
MSFC		UNIV ALA-TUSCALOOSA	NAS 8-2571		42	1076
MSFC		UNIV ALA-TUSCALOOSA	NAS 8-11249		13	1077
MSFC	Emens, F. H.	UNIV ALA-TUSCALOOSA	NAS 8-20172	Houts, R. C.	45	1078
MSFC	Eichelberger, E. P.	UNIV ALA-TUSCALOOSA	NAS 8-20172	Houts, R. C.	45	1078
MSFC	Marrero, P. J.	UNIV ALA-TUSCALOOSA	NAS 8-25562	Webb, W. E.	45	1079
MSFC	Randall, J. L.	UNIV ALA-TUSCALOOSA	NAS 8-25562	Webb, W. E.	45	1079
MSFC	Clarke, W. D.	UNIV ALA-TUSCALOOSA	NAS 8-28019	Hill, J. L.	49	1080
MSFC	Randall, J. L.	UNIV ALA-TUSCALOOSA	NAS 8-28019	Hill, J. L.	49	1080
MSFC	Arnett, G. M.	UNIV ALA-TUSCALOOSA	NAS 8-28098	Miyagawa, I.	13	1081
MSFC	Bannister, T. C.	UNIV ALA-TUSCALOOSA	NAS 8-28098	Miyagawa, I.	13	1081
MSFC	Guest, S. H.	UNIV ALA-TUSCALOOSA	NAS 8-28180	Doughty, J. O.	46	1082
MSFC	Jones, J. H.	UNIV ALA-TUSCALOOSA	NAS 8-28180	Doughty, J. O.	46	1082
MSFC	Davidson, M. C.	UNIV ALA-TUSCALOOSA	NAS 8-29494	De'Smet, D. J.	13	1083
MSFC	Schafer, C.	UNIV ALA-TUSCALOOSA	NAS 8-29494	De'Smet, D. J.	13	1083
MSFC	Eby, P. B.	UNIV ALA-TUSCALOOSA	NAS 8-29900	Coulter, C. A.	13	1084
MSFC	Hale, D. P.	UNIV ALA-TUSCALOOSA	NAS 8-29900	Coulter, C. A.	13	1084
MSFC	Green, W. M.	UNIV ALA-TUSCALOOSA	NAS 8-29936	Hughes, T. H.	32	1085
MSFC	Bensko, J., Jr.	UNIV ALA-TUSCALOOSA	NAS 8-29936	Hughes, T. H.	32	1085
MSFC	Bensko, J., Jr.	UNIV ALA-TUSCALOOSA	NAS 8-29937	Stow, S. H.	32	1086
MSFC	Green, W. M.	UNIV ALA-TUSCALOOSA	NAS 8-29937	Stow, S. H.	32	1086
MSFC	Stone, D.	UNIV ALA-TUSCALOOSA	NAS 8-29953	Dudgeon, J. E.	45	1087
MSFC	Durrett, R. H.	UNIV ALA-TUSCALOOSA	NAS 8-29953	Dudgeon, J. E.	45	1087
MSFC	Kent, M.	UNIV ALA-TUSCALOOSA	NGL 01-002-064	Whitehurst, R.	99	1088
MSFC	Atkins, H. L.	UNIV OF ARIZONA	NAS 8-21572	Simmons, M. J.	11	1129
MSFC	Griner, D. B.	UNIV OF ARIZONA	NAS 8-27804	Tift, W. G.	13	1130
MSFC	Zurasky, J. L.	UNIV OF ARIZONA	NAS 8-27804	Tift, W. G.	13	1130
MSFC	Jones, C. O.	UNIV OF ARIZONA	NAS 8-27863	Shack, R. V.	13	1131
MSFC	Wyman, C. L.	UNIV OF ARIZONA	NAS 8-27863	Shack, R. V.	13	1131
MSFC	Kurtz, R. L.	UNIV OF ARIZONA	NAS 8-28661	Jacobk S. F.	13	1132
MSFC	Williams, J. R.	UNIV OF ARIZONA	NAS 8-28661	Jacobs, S. F.	13	1132
MSFC	Snyder, R. S.	UNIV OF ARIZONA	NAS 8-29566	Bier, M.	13	1133
MSFC	Dabbs, J. R.	UNIV CALIF-BERKELEY	NAS 8-27408	Alvarez, L.	11	1382
MSFC	Ondrak, B. T.	UNIV CALIF-BERKELEY	NAS 8-29603	Price, P. B.	13	1383
MSFC	Neuschafer, R. W.	UNIV CALIF-BERKELEY	NAS 8-29704	Alvarez, L.	31	1384
MSFC	Jones, J. B.	UNIV CALIF-BERKELEY	NAS 8-29704	Alvarez, L.	31	1384
MSFC	McPherson, W.	UNIV CALIF-L ANGELES	NAS 8-26402	Yue, A. S.	43	1474
MSFC	Adams, W. R.	UNIV CALIF-L ANGELES	NAS 8-28310	Yue, A. S.	19	1475
MSFC	Aldrich, B. R.	UNIV CALIF-L ANGELES	NAS 8-28310	Yue, A. S.	19	1475
MSFC	Glaese, J. R.	UNIV CALIF-L ANGELES	NAS 8-28358	Likins, P. W.	49	1476
MSFC	Seltzer, S. M.	UNIV CALIF-L ANGELES	NAS 8-28358	Likins, P. W.	49	1476
MSFC	Power, J. A.	UNIV CALIF-SAN DIEGO	NAS 8-26842	Peterson, L. E.	11	1531
MSFC	Jordan, W. E.	UNIV CALIF-SAN DIEGO	NAS 8-27974	Peterson, L. A.	11	1532
MSFC	Jones, J. B.	UNIV CALIF-SAN DIEGO	NAS 8-27974	Peterson, L. A.	11	1532
MSFC	Wdowiak, T. J.	UNIV CALIF-SAN DIEGO	NAS 8-28015	Hudson, H. S.	11	1533
MSFC	Fountain, W. F.	UNIV CALIF-SAN DIEGO	NAS 8-28015	Hudson, H. S.	11	1533
MSFC	Dabbs, J. R.	UNIV OF CHICAGO	NAS 8-27407	Meyer, P.	11	1914
MSFC	Cochran, J.	UNIV OF CHICAGO	NAS 8-27407	Meyer, P.	11	1914
MSFC	McPherson, W. B.	UNIV OF CONNECTICUT	NAS 8-28734	Katahis, T. Z.	47	1693
MSFC	Hasemeyer, E. A.	UNIV OF CONNECTICUT	NAS 8-28734	Katahis, T. Z.	47	1693
MSFC	Fichtl, G. H.	UNIV OF DAYTON	NAS 8-26600	Engler, N. A.	41	2994

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
MSFC	Vaughan, W. W.	UNIV OF DAYTON	NAS 8-26600	Engler, N. A.	41	2994
MSFC	Johnson, D. L.	UNIV OF DAYTON	NAS 8-28231	Engler, N. A.	31	2995
MSFC	Smith, R. E.	UNIV OF DAYTON	NAS 8-28231	Engler, N. A.	31	2995
MSFC	Reece, O. Y.	UNIV OF DENVER	NAS 8-27277	Otto, H. E.	47	1676
MSFC	Paludan, C. T.	UNIV OF DENVER	NAS 8-28216	Howard, W. A.	39	1677
MSFC	Daniels, J. L., Jr.	UNIV OF DENVER	NAS 8-28216	Howard, W. A.	39	1677
MSFC		UNIV OF FLORIDA	NAS 8-1523		42	1788
MSFC	Schell, J. T.	UNIV OF FLORIDA	NAS 8-20247	Patterson, E. P.	12	1789
MSFC		UNIV OF FLORIDA	NAS 8-26832		41	1790
MSFC		UNIV OF GEORGIA	NAS 8-29939		19	1859
MSFC	McGuire, J. P.	UNIV OF HAWAII	NAS 8-27950		11	1867
MSFC	Gary, A.	UNIV OF HAWAII	NAS 8-27950		11	1867
MSFC		UNIV OF IOWA	NAS 9-1208		51	2039
MSFC	Patterson, J. W.	UNIV OF MASS-AMHERST	NAS 8-29073	Crossley, F. R.	46	2395
MSFC	Dane, D.	UNIV OF MASS-AMHERST	NAS 8-29073	Crossley, F. R.	46	2395
MSFC	Birdwell, B. R.	UNIV MICH-ANN ARBOR	NAS 8-20228	Merte, H., Jr.	49	2442
MSFC	Littles, J. W.	UNIV MICH-ANN ARBOR	NAS 8-20228	Merte, H., Jr.	49	2442
MSFC	Smith, R. E.	UNIV MICH-ANN ARBOR	NAS 8-21086	Carignan, G. R.	31	2443
MSFC	Inghan, H. L.	UNIV MICH-ANN ARBOR	NAS 8-26929	Powers, W. F.	21	2444
MSFC	Causey, W. E.	UNIV MICH-ANN ARBOR	NAS 8-26929	Powers, W. F.	21	2444
MSFC	Kaufman, J. W.	UNIV MICH-ANN ARBOR	NAS 8-28294	Cicerone, R. J.	13	2445
MSFC	Devries, L. L.	UNIV MICH-ANN ARBOR	NAS 8-28294	Cicerone, R. J.	13	2445
MSFC	Smith, R. E.	UNIV MICH-ANN ARBOR	NAS 8-28592	McWatters, K. D.	41	2446
MSFC	West, G. S.	UNIV MICH-ANN ARBOR	NAS 8-28592	McWatters, K. D.	41	2446
MSFC	Roberts, W. T.	UNIV MICH-ANN ARBOR	NGR 23-005-151	Samir, U.	31	2455
MSFC	Krome, H. O.	U MINN-MNPLS-ST PAUL	NAS 8-26845	Waddington, C. J.	11	2501
MSFC	Jones, J. B.	U MINN-MNPLS-ST PAUL	NAS 8-26845	Waddington, C. J.	11	2501
MSFC	Cochran, J.	U MINN-MNPLS-ST PAUL	NAS 8-27977	Waddington, C. J.	11	2502
MSFC	Krome, H. O.	U MINN-MNPLS-ST PAUL	NAS 8-27977	Waddington, C. J.	11	2502
MSFC	Campbell, R. A.	UNIV MO-ROLLA	NAS 8-28230	Pazdera, J. S.	41	2568
MSFC	Golley, P. T.	UNIV MO-ROLLA	NAS 8-28230	Pazdera, J. S.	41	2568
MSFC	Randall, J. L.	UNIV OF MONTEVALLO	NAS 8-27301	Foreman, J. W., Jr.	11	1091
MSFC	Hoover, R. B.	UNIV OF MONTEVALLO	NAS 8-27301	Foreman, J. W., Jr.	11	1091
MSFC		UNIV N CAR-CHPL HILL	NAS 8-20106		42	2918
MSFC	Parnell, T. A.	UNIV N CAR-CHPL HILL	NAS 8-26601	Childs, C. B.	13	2919
MSFC	Oran, W.	UNIV N CAR-CHPL HILL	NAS 8-26601	Childs, C. B.	13	2919
MSFC	Strong, J. S.	UNIV OF NOTRE DAME	NAS 8-25601	Mueller, T. J.	46	2016
MSFC	Gross, K. W.	UNIV OF NOTRE DAME	NAS 8-25601	Mueller, T. J.	46	2016
MSFC	Turner, R. E.	UNIV OKLAHOMA-NORMAN	NAS 8-28659	Inman, R. L.	31	3006
MSFC	Nelson, J. F.	UNIV OKLAHOMA-NORMAN	NAS 8-28659	Inman, R. L.	31	3006
MSFC	Fichtl, G. H.	UNIV OKLAHOMA-NORMAN	NAS 8-30175	Canfield, J. M.	41	3007
MSFC	Stephens, J. B.	UNIV OKLAHOMA-NORMAN	NAS 8-30175	Canfield, J. M.	41	3007
MSFC	Parnell, T. A.	UNIV SAN FRANCISCO	NAS 8-26758	Benton, E. V.	13	1585
MSFC	Seltzer, S. M.	UNIV OF SANTA CLARA	NAS 8-27799	Siljak, D. D.	49	1587
MSFC	Nurre, G. S.	UNIV OF SANTA CLARA	NAS 8-27799	Siljak, D. D.	49	1587
MSFC	Brown, S. C.	UNIV OF SO ALABAMA	NAS 8-28722	Elliott, J. M.	46	1092
MSFC	Larson, P. A.	UNIV OF SO ALABAMA	NAS 8-28722	Elliott, J. M.	46	1092
MSFC	Lowery, D. O.	UNIV OF SO CAROLINA	NAS 8-28660	Fellers, R. G.	45	3141
MSFC	Stephens, J. K.	UNIV OF SO CAROLINA	NAS 8-28660	Fellers, R. G.	45	3141
MSFC	Davidson, M. C.	UNIV OF SOUTHERN CAL	NAS 8-28305	Wilcox, W. R.	19	1602
MSFC	Adams, W. R.	UNIV OF SOUTHERN CAL	NAS 8-28305	Wilcox, W. R.	19	1602
MSFC	Bannister, T. C.	UNIV OF SOUTHERN CAL	NAS 8-29847	Wilcox, W. R.	13	1603
MSFC	Facemire, B. E.	UNIV OF SOUTHERN CAL	NAS 8-29847	Wilcox, W. R.	13	1603
MSFC		UNIV SO MISSISSIPPI	NAS 8-5414		72	2545
MSFC	Parker, J. R.	UNIV TENNESSEE-KNOXV	NAS 8-27296	Hung, J. C.	42	3159
MSFC	Berry, E. H.	UNIV TENNESSEE-KNOXV	NAS 8-27296	Hung, J. C.	42	3159
MSFC	Nelson, J.	UNIV TENNESSEE-KNOXV	NAS 8-27387	Frost, W.	46	3160
MSFC	Fichtl, G. H.	UNIV TENNESSEE-KNOXV	NAS 8-27387	Frost, W.	46	3160

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
MSFC	Ellsworth, J. D.	UNIV TENNESSEE-KNOXV	NAS 8-28251	Hung, J. C.	45	3161
MSFC	Thompson, Z.	UNIV TENNESSEE-KNOXV	NAS 8-28251	Hung, J. C.	45	3161
MSFC	Thornton, W. G.	UNIV TENNESSEE-KNOXV	NAS 8-29271	Gonzalez, R. C.	45	3162
MSFC	Borelli, M. T.	UNIV TENNESSEE-KNOXV	NAS 8-29271	Gonzalez, R. C.	45	3162
MSFC	Fichtl, G. H.	UNIV TENNESSEE-KNOXV	NAS 8-29584	Frost, W.	46	3163
MSFC	Alexander, M.	UNIV TENNESSEE-KNOXV	NAS 8-29584	Frost, W.	46	3163
MSFC	Thompson, Z.	UNIV TENNESSEE-KNOXV	NAS 8-29632	Hung, J. C.	46	3164
MSFC	Ellsworth, J. D.	UNIV TENNESSEE-KNOXV	NAS 8-29632	Hung, J. C.	46	3164
MSFC	Messer, C. W.	UNIV TENNESSEE-KNOXV	NGR 43-001-115	Shahrokh, F.	39	3173
MSFC	Fehlberg, E.	UNIV TEXAS-AUSTIN	NAS 8-27931	Tapley, B. D.	21	3323
MSFC	Watters, H. H.	UNIV TEXAS-AUSTIN	NAS 8-28511	Helmreich, K.	69	3324
MSFC	Ponder, T. W.	UNIV WISC-MADISON	NAS 8-21015	Kraushaar, W. L.	11	3574
MSFC	Rose, S. D.	UNIV WISC-MADISON	NAS 8-21015	Kraushaar, W. L.	11	3574
MSFC	Poorman, R. M.	UNIV WISC-MADISON	NAS 8-28733	Adams, C. M.	46	3575
MSFC	Hoppes, R. V.	UNIV WISC-MADISON	NAS 8-28733	Adams, C. M.	46	3575
MSFC	King, C. A.	VANDERBILT UNIVERSITY	NAS 8-28764	Bradshaw, C.	21	3181
MSFC	Wesson, R. L.	VANDERBILT UNIVERSITY	NAS 8-28764	Bradshaw, C.	21	3181
MSFC	Caruso, S. V.	VANDERBILT UNIVERSITY	NAS 8-29460	Kinser, D. L.	47	3182
MSFC	Allen, R. V.	VANDERBILT UNIVERSITY	NAS 8-29460	Kinser, D. L.	47	3182
MSFC	Jones, J. H.	WASHINGTON UNIVERSITY	NAS 8-26084	Rodin, E. Y.	13	2574
MSFC	Wilhold, G. A.	WASHINGTON UNIVERSITY	NAS 8-26084	Rodin, E. Y.	13	2574
MSFC	Jones, J.	WASHINGTON UNIVERSITY	NAS 8-26843	Israel, M. H.	11	2575
MSFC	Dabbs, J. R.	WASHINGTON UNIVERSITY	NAS 8-26843	Israel, M. H.	11	2575
MSFC	Krome, H. O.	WASHINGTON UNIVERSITY	NAS 8-27976	Israel, M. H.	11	2576
MSFC	Cochran, J.	WASHINGTON UNIVERSITY	NAS 8-27976	Israel, M. H.	11	2576
MSFC	Huffaker, R. M.	WAYNE STATE UNIV	NAS 8-24810	Thomson, J. A.	13	2485
MSFC	Krupnick, A. C.	WAYNE STATE UNIV	NAS 8-29823	Brown, R. K.	51	2486
MSFC	Allen, R. E.	WAYNE STATE UNIV	NAS 8-29823	Brown, R. K.	51	2486
MSFC	McDonough, G.	XAVIER UNIV-LA	NGR 19-007-002	Fulwiler, J. H.	76	2119
MTF	Mooneyham, D. W.	JACKSON STATE COL	NGR 25-011-001	Nelson, F.	51	2528
MTF	Wolverton, B. C.	JACKSON STATE COL	NGR 25-011-002	Perkins, J.	61	2529
MTF	Mooneyhan, D. W.	LA STATE U-BAT ROUGE	NGL 19-001-105	Whitehurst, C. A.	39	2098
MTF	Mooneyhan, D. W.	MISSISSIPPI STATE U	NAS 9-11607	Bouchillon, C. W.	39	2537
MTF	Mooneyhan, D. W.	MISSISSIPPI STATE U	NAS 9-13363	Bouchillon, C. W.	99	2538
MTF	Mooneyhan, D. W.	UNIV SO MISSISSIPPI	NGL 25-005-007	Pinson, J. W.	39	2546
NSO-N		MASS INST OF TECH	SNPN-54		49	2380
WS	Holton, E. M.	COLLEGE OF WM & MARY	NGR 47-006-064	Jolly, R. K.	59	3437
WS	Oberholtzer, J. D.	COLLEGE OF WM & MARY	NGR 47-006-064	Jolly, R. K.	59	3437
WS	Jackson, E. B.	COLORADO STATE UNIV	NGR 06-002-075	Jordan, J. P.	51	1637
WS	Holton, E. M.	COLORADO STATE UNIV	NGR 06-002-075	Jordan, J. P.	51	1637
WS	Holton, E. M.	EMORY UNIVERSITY	NGL 11-001-009	Popovic, V. P.	51	1820
WS	Krieger, R. L.	OLD DOMINION UNIV	NGL 47-003-067	Kindle, E. C.	39	3452
WS	West, W. W.	RICE UNIVERSITY	NAS 6-1667	Freeman, J. W.	11	3213
WS	Gray, J. W.	RICE UNIVERSITY	NAS 6-1667	Freeman, J. W.	11	3213
WS	Vaughn, C. R.	STATE UNIV NY-BUFFAL	NGL 33-183-012	Williams, T. C.	51	2843
WS	Gray, J. W.	UNIV ALASKA-FAIRBNS	NAS 6-1932	Davis, T. N.	31	1096
WS	Holton, E. M.	UNIV CALIF-DAVIS	NGR 05-004-035	Smith, R. E.	51	1459
WS	Jackson, E. B.	UNIV CALIF-DAVIS	NGR 05-004-035	Smith, R. E.	51	1459
WS	Milliner, C. F., Jr.	UNIV ILLINOIS-URBANA	NGR 14-005-181	Bowhill, S. A.	19	1965
WS	Curtis, C. M.	UNIV OF KANSAS	NAS 6-1967	Haralick, R. M.	21	2050
WS	Harmon, T. J.	UNIV OF KANSAS	NAS 6-1967	Haralick, R. M.	21	2050
WS	Floyd, J. C.	UNIV MD-EASTRN SHORE	NAS 6-2067		99	2198
WS	Denton, S. R.	UNIV MD-EASTRN SHORE	NAS 6-2067		99	2198
WS	Raine, A.	UNIV MD-EASTRN SHORE	NGR 21-119-002	Nagarajon, N.	41	2200
WS	Lacheman, E. R., Jr.	UNIV MD-EASTRN SHORE	NGR 21-119-003	Singh, G.	31	2201
WS	Maurer, H. E.	UNIV MICH-ANN ARBOR	NAS 6-2058	Thompson, F. J.	39	2441
WS	Everton, E. R.	UNIV MICH-ANN ARBOR	NAS 6-2058	Thompson, F. J.	39	2441
WS	Rossi, L. C.	UNIV OF MILAN	NASW 2211	Gualtierotti, T.	61	3621

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WS	Holton, E. M.	UNIV MO-COLUMBIA	NGL 26-004-021	Musacchia, X. J.	51	2557
WS	Jackson, E. B.	UNIV MO-COLUMBIA	NGL 26-004-021	Musacchia, X. J.	51	2557
WS		UNIV MO-COLUMBIA	NGR 26-004-025	South, F. E.	51	2558
WS	Spurling, J. F.	UNIV OF UTAH	NAS 6-1908	Staffanson, F. L.	31	3413
WS	West, W. H.	UNIV OF UTAH	NAS 6-1908	Staffanson, F. L.	31	3413
WS	Scott, J. H.	VIRGINIA POLY INST	NAS 6-1863	Petry, D. E.	39	3498
WS	Bettle, J. F.	VIRGINIA POLY INST	NAS 6-1863	Petry, D. E.	39	3498
HQ-AA	Emme, E. M.	JOHNS HOPKINS UNIV	NSR 21-001-077		73	2143
HQ-EC	Verostko, C. E.	BROOME COMMUNITY COL	NAS 9-12870	Forsythe, R. K.	12	2708
HQ-EC	Silverman, D.	MASS INST OF TECH	NASW 2197	Harrington, J. V.	99	2302
HQ-EC	Andrus, A. G.	MASS INST OF TECH	NASW 2197	Harrington, J. V.	99	2302
HQ-EC	Silverman, D.	WASHINGTON UNIVERSITY	NGL 26-008-054	Morgan, R. P.	99	2578
HQ-ER	Jacobs, G. J.	BOSTON UNIVERSITY	NGR 22-004-024	MacKay, R. S.	51	2210
HQ-ER	Park, A. B.	COLORADO SCH OF MINE	NGL 06-001-015	Lee, K.	39	1623
HQ-ER	Jacobs, G. J.	HARVARD UNIVERSITY	NGR 22-007-138	Herrnstein, R. J.	61	2232
HQ-ER	Swetnick, M. T.	MARQUETTE UNIVERSITY	NGR 50-001-010	Markowitz, W.	13	3560
HQ-ER	Lehmann, J.	NORTHEASTERN UNIV	NGR 22-011-072	Nowak, W. B.	39	2385
HQ-ER		PROVIDENCE COLLEGE	NGR 40-005-002	Gora, E. K.	21	3131
HQ-ER		STATE UNIV NY-BUFFAL	NGR 33-015-016	Danielli, J. F.	51	2845
HQ-ER	Jacobs, R. G.	STATE UNIV NY-BUFFAL	NGR 33-183-003	Williams, T. C.	51	2847
HQ-ER	Lehmann, J.	SYRACUSE UNIVERSITY	NGL 33-022-090	Barzelay, M. E.	79	2872
HQ-ER	Jacobs, G. J.	UNIV CALIF-BERKELEY	NGL 05-003-404	Colewell, R. N.	39	1403
HQ-ER	Lehmann, J.	UNIV COLORADO-BOLDR	NGR 06-003-160	Baird, J. R.	45	1663
HQ-ER	Jacobs, G. J.	UNIV MARYLAND-BALT	NGR 21-002-040	Grenell, R. G.	51	2146
HQ-ER	Park, A. B.	UNIV MICH-ANN ARBOR	NSR 23-005-480	Cook, J. J.	39	2484
HQ-ER	Ahmajian, A. M.	UNIV MICH-ANN ARBOR	NSR 23-005-480	Cook, J. J.	39	2484
HQ-ER	Lehmann, J.	UNIV MO-KANSAS CITY	NGR 26-001-012	Querry, M. R.	13	2565
HQ-ER	Jacobs, G. J.	UNIV OF MONTANA	NGR 27-002-006	Craighead, J. J.	51	2588
HQ-ER	Park, A. B.	UNIV OF MONTANA	NGR 27-002-006	Craighead, J. J.	51	2588
HQ-ER		UNIV OF MUNICH	NSG 305	Moller, F.	31	3629
HQ-ER	Lehmann, J.	UNIV OF RHODE ISLAND	NGR 40-004-022	Sadasiv, G.	45	3133
HQ-ER	Tepper, M.	UNIV WISC-MADISON	NGL 50-002-114	Suomi, V. E.	39	3581
HQ-ES	Milwitzky, B.	MARQUETTE UNIVERSITY	NGR 50-001-010	Markowitz, W.	13	3560
HQ-ES	Murphy, J. P.	OHIO STATE UNIV	NASW 2435	Mueller, I. I.	32	2963
HQ-ES	Murphy, J. P.	OHIO STATE UNIV	NGL 36-008-093	Mueller, I. I.	19	2965
HQ-FE		CAL STATE U-LG BEACH	NASR 188	Dean, C. T.	99	1244
HQ-FE		CAL STATE U-LG BEACH	NSR 05-013-008	Dean, C. T.	99	1247
HQ-FE	Ahrendt, M. H.	DUKE UNIVERSITY	NSR 34-001-025	Reynolds, T. D.	13	2890
HQ-FE	Collin, E. E.	OKLAHOMA STATE UNIV	NASW 1964	Wiggins, K. E.	99	3001
HQ-FE	Rich, W. B.	OKLAHOMA STATE UNIV	NASW 1964	Wiggins, K. E.	99	3001
HQ-FE	Tuttle, F. B.	OREGON STATE UNIV	NGR 38-002-018	Williamson, S. E.	12	3018
HQ-FE		PRATT INSTITUTE	NASR 199	Heindel, R. H.	99	2829
HQ-FE	Thorne, M.	UNIV NEBRASKA-LINCLN	NASW 2213	Kopp, O. W.	99	2593
HQ-FE		UNIV OF SO FLORIDA	NAS10-2948		99	1817
HQ-I	Barnes, R.	UNIV OF DENVER	NGL 06-004-096	Blackledge, J. P.	41	1681
HQ-I	Frutkin, A. W.	UNIV OF MIAMI	NGR 10-007-089	Harvey, M. L.	75	1813
HQ-JG	Arnoldi, L. B.	HARVARD UNIVERSITY	NGR 22-007-203	Hershberg, P. I.	52	2239
HQ-JG	Limoncelli, D. D.	HARVARD UNIVERSITY	NGR 22-007-203	Hershberg, P. I.	52	2239
HQ-JG	Mockbee, J.	UNIV MICH-ANN ARBOR	NGR 23-005-185	French, J. R., Jr.	52	2456
HQ-JG	Arnoldi, L. B.	UNIV MICH-ANN ARBOR	NGR 23-005-185	French, J. R., Jr.	52	2456
HQ-KT		GEORGE WASHINGTON U	NASW 2055	Cantor, H.	75	1750
HQ-KT	Hamilton, J. T.	GEORGE WASHINGTON U	NASW 2444	Wright, P.	99	1751
HQ-KT	Ault, L. A.	GEORGE WASHINGTON U	NASW 2444	Wright, P.	99	1751
HQ-KT		INDIANA U-BLOOMINGTN	NASW 2353		99	1976
HQ-KT		INDIANA U-BLOOMINGTN	NASW 2467		99	1977
HQ-KT	Philips, R. J.	NORTHWESTERN UNIV	NGL 14-007-062	Rubenstein, A. H.	99	1894
HQ-KT	Holley, H. L.	SOUTHEASTN STATE COL	NASW 2379	Gold, C. H.	99	3003
HQ-KT		SOUTHEASTN STATE COL	NASW 2512		99	3004

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HQ-KT		STANFORD UNIVERSITY	NASW 2216		99	1297
HQ-KT	Carlson, J. M.	UNIV OF CONNECTICUT	NASW 2307		99	1697
HQ-KT	Hamilton, J. T.	UNIV OF CONNECTICUT	NASW 2307		99	1697
HQ-KT		UNIV OF CONNECTICUT	NASW 2516		99	1698
HQ-KT	Orrick, D. W.	UNIV OF DENVER	NASW 2358	Kottenstette, J. P.	99	1678
HQ-KT	Orrick, D. W.	UNIV OF DENVER	NASW 2362	Kottenstette, J. P.	99	1679
HQ-KT	Carlson, J. M.	UNIV OF DENVER	NASW 2362	Kottenstette, J. P.	99	1679
HQ-KT	Carlson, J. M.	UNIV OF DENVER	NSR 06-004-063	Kottenstette, J. P.	99	1689
HQ-KT	Glassman, S. J.	UNIV OF DENVER	NSR 06-004-063	Kottenstette, J. P.	99	1689
HQ-KT	Carlson, J. M.	UNIV OF GEORGIA	NASW 2401	Park, M. K.	99	1860
HQ-KT	Phillips, R. J.	UNIV OF GEORGIA	NASW 2401	Park, M. K.	99	1860
HQ-KT	Phillips, R. J.	UNIV OF MIAMI	NSR 10-007-087	Harvey, M. L.	99	1816
HQ-KT	Carlson, J. M.	UNIV OF MIAMI	NSR 10-007-087	Harvey, M. L.	99	1816
HQ-KT	Carlson, J. M.	UNIV OF NEW MEXICO	NASW 2275		99	2697
HQ-KT	Phillips, R. J.	UNIV OF NEW MEXICO	NASW 2275		99	2697
HQ-KT	Holley, H. L.	UNIV OF NEW MEXICO	NASW 2399	Shinnick, W. A.	99	2698
HQ-KT	Carlson, J. M.	UNIV OF PITTSBURGH	NASW 2291		99	3104
HQ-KT	Holley, H. L.	UNIV OF PITTSBURGH	NASW 2291		99	3104
HQ-KT		UNIV OF PITTSBURGH	NSR 39-011-064	Kent, A.	99	3119
HQ-KT		UNIV OF PITTSBURGH	NSR 39-011-074		99	3120
HQ-KT	Carlson, J. M.	UNIV OF SOUTHERN CAL	NASW 1869	Ehrenreich, J. W.	99	1605
HQ-KT	Phillips, R. J.	UNIV OF SOUTHERN CAL	NASW 1869	Ehrenreich, J. W.	99	1605
HQ-KT	Carlson, J. M.	UNIV OF SOUTHERN CAL	NASW 2360		99	1606
HQ-KT	Holley, H. L.	UNIV OF SOUTHERN CAL	NASW 2360		99	1606
HQ-KT	Richards, J.	UNIV OF VIRGINIA	NGL 47-005-014	Barnes, D. W.	42	3470
HQ-KT		WAYNE STATE UNIV	NSR 23-006-037	Prince, B. W.	99	2489
HQ-PA		GEORGE WASHINGTON U	NSR 09-010-019	Rothrock, A. M.	99	1762
HQ-PA		GEORGE WASHINGTON U	NSR 09-010-021	Rothrock, A. M.	99	1763
HQ-PA	Smolensky, S.	MASS INST OF TECH	NGL 22-009-309	Zannetos, Z. S.	45	2323
HQ-PY	Pohly, J. G.	ALABAMA A&M UNIV	NGR 01-001-013	Lowsine, L.	41	1001
HQ-PY	Pohly, J. G.	ALABAMA A&M UNIV	NGR 01-001-017	George, M. C.	13	1003
HQ-PY	Pohly, J. H.	ALABAMA A&M UNIV	NGR 01-001-018	Manager, M. C.	39	1004
HQ-PY	Pohly, J. G.	ALABAMA A&M UNIV	NGR 01-001-020	Lee, C. T.	13	1005
HQ-PY	Pohly, J. G.	ALABAMA A&M UNIV	NGR 01-001-021	Weathers, G. D.	46	1006
HQ-PY	Pohly, J. G.	ALABAMA A&M UNIV	NGR 01-001-023	Golden, M. S.	39	1007
HQ-PY	Carter, C. H.	ARIZONA STATE UNIV	NGT 03-001-002	Burke, W. J.	99	1112
HQ-PY	Carter, C. H.	AUBURN UNIV-AUBURN	NGT 01-003-001	Parker, W. V.	99	1026
HQ-PY	Carter, C. H.	AUBURN UNIV-AUBURN	NGT 01-003-044	Vachon, R. I.	49	1027
HQ-PY	Carter, C. H.	AUBURN UNIV-AUBURN	NGT 01-003-045	O'Brien, J. F.	49	1028
HQ-PY	Pohly, J. G.	BETHUNE-COOKMAN COL	NGR 10-022-001	Poonai, P.	39	1777
HQ-PY	Morris, J. D.	BOSTON COLLEGE	NGR 22-003-028	Bruce, B. N.	75	2206
HQ-PY	Carter, C. H.	BOSTON COLLEGE	NGT 22-003-001	Aronoff, S.	99	2207
HQ-PY	Pohly, J. G.	BOWIE STATE COLLEGE	NGR 21-027-004	Srivastava, S.	21	2125
HQ-PY		BOWIE STATE COLLEGE	NGT 21-027-009		21	2127
HQ-PY	Carter, C. H.	CALIF INST OF TECH	NGL 05-002-229	Cole, D.	41	1209
HQ-PY	Carter, C. H.	CALIF INST OF TECH	NGT 05-002-009	Pings, C. J.	99	1237
HQ-PY	Carter, C. H.	CARNEGIE-MELLON UNIV	NGT 39-002-002	Strehler, A. F.	99	3043
HQ-PY	Carter, C. H.	CASE WESTERN RESERVE	NGT 36-003-007	Thomas, R. H.	99	2947
HQ-PY	Carter, C. H.	CASE WESTERN RESERVE	NGT 36-027-011	Prahl, J. M.	49	2948
HQ-PY	Carter, C. H.	CATHOLIC UNIVERSITY	NGT 09-005-093	Fang, B. T.	49	1743
HQ-PY	Pohly, J. G.	CENTRAL ST UNIV-OHIO	NGR 36-033-001	Hartzler, E. A.	13	2949
HQ-PY	Pohly, J. G.	CENTRAL ST UNIV-OHIO	NGR 36-033-002	Rubin, D.	39	2950
HQ-PY	Pohly, J. G.	CENTRAL ST UNIV-OHIO	NGR 36-033-003	Craft, T. J.	51	2951
HQ-PY	Redding, E. R.	COLLEGE OF WM & MARY	NGL 47-006-055	Sher, A.	99	3432
HQ-PY	Vitale, J. A.	COLORADO SCH OF MINE	NGL 06-001-015	Lee, K.	39	1623
HQ-PY	Carter, C. H.	COLORADO STATE UNIV	NGT 06-002-002	Bragonier, W. H.	99	1648
HQ-PY	Redding, E. R.	COLUMBIA UNIVERSITY	NGL 33-008-012	Woltjer, L.	19	2729
HQ-PY	Morris, J. D.	COLUMBIA UNIVERSITY	NGR 33-008-168	Ginzberg, E.	72	2738

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-PY	Morris, J. D.	COLUMBIA UNIVERSITY	NGR 33-008-168	Ginzberg, E.	72	2738
HQ-PY	Carter, C. H.	COLUMBIA UNIVERSITY	NGT 33-008-013	Robey, R. C.	99	2742
HQ-PY	Vitale, J. A.	CORNELL UNIVERSITY	NGL 33-010-171	Liang, T.	39	2762
HQ-PY	Vitale, J. A.	CORNELL UNIVERSITY	NGR 33-010-071	McHanus, H. N.	49	2765
HQ-PY	Carter, C. H.	DARTMOUTH COLLEGE	NGT 30-001-003	Hornig, J. F.	99	2608
HQ-PY	Pohly, J. G.	DELAWARE STATE COL	NGR 08-002-001	Helmy, E. M.	13	1721
HQ-PY	Pohly, J. G.	DELAWARE STATE COL	NGR 08-002-005	Helmy, E. M.	13	1723
HQ-PY	Pohly, J. G.	DILLARD UNIVERSITY	NGR 19-015-001	Rogers, R.	39	2079
HQ-PY	Morris, J. D.	DREXEL UNIVERSITY	NGL 39-004-020	Hagerty, W. W.	75	3045
HQ-PY	Carter, C. H.	DUKE UNIVERSITY	NGT 34-001-003	Harmon, F.	99	2889
HQ-PY	Carter, C. H.	EMORY UNIVERSITY	NGT 11-001-005	Lester, C. T.	99	1824
HQ-PY	Pohly, J. G.	FEDERAL CITY COLLEGE	NGR 09-050-010	McDowell, H.	11	1747
HQ-PY	Carter, C. H.	FLORIDA STATE UNIV	NGT 10-004-008	Keirs, R. J.	99	1784
HQ-PY	Carter, C. H.	FORDHAM UNIVERSITY	NGT 33-012-002	Finley, J.	99	2793
HQ-PY	Redding, E. R.	GEORGE WASHINGTON U	NGL 09-010-030	Mayo, A. L.	79	1753
HQ-PY	Vitale, J. A.	GEORGIA INST OF TECH	NGR 11-002-081	Hansen, A. G.	99	1845
HQ-PY	Carter, C. H.	GEORGIA INST OF TECH	NGT 11-002-006	Webb, S. C.	99	1855
HQ-PY	Vitale, J.	GEORGIA INST OF TECH	NGT 11-002-064	Hansen, A. G.	99	1856
HQ-PY	Pohly, J. G.	GRAMBLING COLLEGE	NGR 19-011-009	Terrell, J.	13	2082
HQ-PY	Pohly, J. G.	GRAMBLING COLLEGE	NGR 19-011-012	Sabu, D. D.	43	2083
HQ-PY	Pohly, J. G.	GRAMBLING COLLEGE	NGR 19-011-013	Gajendar, N.	31	2084
HQ-PY	Pohly, J. G.	GRAMBLING COLLEGE	NGR 19-011-014	Cross, M. A.	13	2085
HQ-PY	Pohly, J. G.	GRAMBLING COLLEGE	NGR 19-011-016	Narasimhamurty H, A.	13	2086
HQ-PY		HAMPTON INSTITUTE	NGR 47-020-005		13	3441
HQ-PY	Carter, C. H.	HARVARD UNIVERSITY	NGT 22-007-008	McFarland, R. A.	99	2244
HQ-PY	Pohly, J. G.	HOWARD UNIVERSITY	NGL 09-011-046	Ferguson, G. A.	39	1769
HQ-PY	Pohly, J. G.	HOWARD UNIVERSITY	NGR 09-011-039	Bainum, P. M.	41	1772
HQ-PY	Huff, V. N.	HOWARD UNIVERSITY	NGR 09-011-053	Bainum, P. M.	41	1774
HQ-PY	Pohly, J. G.	HOWARD UNIVERSITY	NGR 09-011-053	Bainum, P. M.	41	1774
HQ-PY	Carter, C. H.	HOWARD UNIVERSITY	NGT 09-011-001	Miller, C. L.	99	1775
HQ-PY	Chen, W. T.	HOWARD UNIVERSITY	NGT 09-011-051	DeLoatch, E. M.	59	1776
HQ-PY	Carter, C. H.	ILL INST OF TECH	NGT 14-004-002	Grad, A.	99	1888
HQ-PY	Carter, C. H.	IOWA STATE UNIV	NGT 16-002-002	Zaffarano, D. J.	99	2023
HQ-PY	Pohly, J. G.	JACKSON STATE COL	NGR 25-011-001	Nelson, F.	51	2528
HQ-PY	Pohly, J. G.	JACKSON STATE COL	NGR 25-011-002	Perkins, J.	61	2529
HQ-PY	Carter, C. H.	JOHNS HOPKINS UNIV	NGT 21-001-004	Kimball, A. W.	99	2142
HQ-PY	Carter, C. H.	LEHIGH UNIVERSITY	NGT 39-007-003	Stout, R. D.	99	3062
HQ-PY	Quinn, H. B.	LA STATE U-BAT ROUGE	NGL 19-001-024	Whitehurst, C. A.	49	2094
HQ-PY	Redding, E. R.	LA STATE U-BAT ROUGE	NGL 19-001-024	Whitehurst, C. A.	49	2094
HQ-PY	Redding, E. R.	LA STATE U-BAT ROUGE	NGL 19-001-097	Whitehurst, C. A.	39	2097
HQ-PY	Vitale, J. A.	LA STATE U-BAT ROUGE	NGL 19-001-105	Whitehurst, C. A.	39	2098
HQ-PY	Redding, E. R.	MASS INST OF TECH	NGL 22-009-019	Harrington, J. V.	99	2315
HQ-PY	Redding, E. R.	MASS INST OF TECH	NGL 22-009-638	Harrington, J. V.	99	2330
HQ-PY	Vitale, J. A.	MICHIGAN STATE UNIV	NGL 23-004-083	Boylan, M. G.	39	2415
HQ-PY	Carter, C. H.	MICHIGAN STATE UNIV	NGT 23-004-004	Minkel, C. W.	99	2421
HQ-PY	Redding, E. R.	MISSISSIPPI STATE U	NGL 25-001-028	Bouchillon, C. W.	59	2539
HQ-PY	Redding, E. R.	MISSISSIPPI STATE U	NGL 25-001-040	Brown, L. R.	39	2541
HQ-PY	Carter, C. H.	MISSISSIPPI STATE U	NGT 25-001-002	McKee, J. C., Jr.	99	2543
HQ-PY	Pohly, J. G.	MOREHOUSE COLLEGE	NGR 11-008-002	Spight, C.	13	1858
HQ-PY	Pohly, J. G.	MORGAN STATE COLLEGE	NGT 21-025-006	Proctor, N. K.	19	2144
HQ-PY	Carter, C. H.	NEW YORK UNIVERSITY	NGT 33-016-014	Ragazzini, J. R.	99	2822
HQ-PY	Pohly, J. G.	NORFOLK STATE COL	NGR 47-025-001	Colegate, R. L.	62	3442
HQ-PY	Pohly, J. G.	NO CAR A&T STATE U	NGR 34-012-003	Madan, R. N.	45	2891
HQ-PY	Pohly, J. G.	NO CAR A&T STATE U	NGR 34-012-004	Williams, L.	45	2892
HQ-PY	Carter, C. H.	NO CAROLINA STATE U	NGT 34-002-097	Hart, F.	49	2917
HQ-PY	Carter, C. H.	NO DAKOTA STATE UNIV	NGT 35-001-001	Smith, G. S.	99	2926
HQ-PY	Vitale, J. A.	NORTHEASTERN UNIV	NGR 22-011-072	Nowak, W. B.	39	2385
HQ-PY	Carter, C. H.	NORTHEASTERN UNIV	NGT 22-011-003	Essigmann, M. W.	99	2388

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-PY	Morris, J. D.	NORTHWESTERN UNIV	NGL 14-007-058	Radnor, M.	79	1893
HQ-PY	Morris, J. D.	NORTHWESTERN UNIV	NGL 14-007-062	Rubenstein, A. H.	99	1894
HQ-PY	Carter, C. H.	NORTHWESTERN UNIV	NGT 14-007-004	Baker, R. H.	99	1903
HQ-PY	Carter, C. H.	OHIO STATE UNIV	NGT 36-008-006	Roaden, A.	99	2979
HQ-PY	Vitale, J. A.	OLD DOMINION UNIV	NGL 47-003-067	Kindle, E. C.	39	3452
HQ-PY	Carter, C. H.	OLD DOMINION UNIV	NGT 47-003-028	Goglia, G. L.	49	3464
HQ-PY	Carter, C. H.	OLD DOMINION UNIV	NGT 47-003-029	Goglia, G. L.	49	3465
HQ-PY	Vitale, J. A.	OREGON STATE UNIV	NGL 38-002-053	Poulton, C. E.	39	3016
HQ-PY	Carter, C. H.	OREGON STATE UNIV	NGT 38-002-001	Hansen, H. P.	99	3020
HQ-PY	Redding, E. R.	PENNSYLVANIA STATE U	NGL 39-009-015	Ebaugh, P.	99	3074
HQ-PY	Quinn, H. B.	PENNSYLVANIA STATE U	NGL 39-009-015	Ebaugh, P.	99	3074
HQ-PY	Carter, C. H.	PENNSYLVANIA STATE U	NGT 39-009-011	Howell, B. F., Jr.	99	3093
HQ-PY	Carter, C. H.	PENNSYLVANIA STATE U	NGT 39-009-141	Reethof, G.	99	3094
HQ-PY	Carter, C. H.	POLY INST BROOKLYN	NGT 33-006-003	Giordano, A. B.	99	2828
HQ-PY	Pohly, J. G.	PRAIRIE VIEW A&M COL	NGR 44-033-014	Stubblefield, C. T.	12	3208
HQ-PY	Pohly, J. G.	PRAIRIE VIEW A&M COL	NGR 44-033-015	Sohel, M. S.	43	3209
HQ-PY	Pohly, J. G.	PRAIRIE VIEW A&M COL	NGR 44-033-016	Yeh, H. Y.	46	3210
HQ-PY	Carter, C. H.	PRINCETON UNIVERSITY	NGT 31-001-009	Pittendrigh, C. S.	99	2671
HQ-PY	Vitale, J. A.	PURDUE UNIVERSITY	NGL 15-005-112	Landgrebe, D. A.	13	1994
HQ-PY	Vitale, J. A.	PURDUE UNIVERSITY	NGL 15-005-186	Landgrebe, D. A.	39	1997
HQ-PY	Vitale, J. A.	PURDUE UNIVERSITY	NGR 15-005-069	Modrey, J.	49	1999
HQ-PY	Carter, C. H.	PURDUE UNIVERSITY	NGT 15-005-005	Andrews, F. N.	99	2010
HQ-PY	Carter, C. H.	PURDUE UNIVERSITY	NGT 15-005-061	Waling, J. L.	99	2011
HQ-PY	Carter, C. H.	RENSSELAER POLY-NY	NGT 33-018-010	Wiberley, S. E.	99	2840
HQ-PY	Redding, E. R.	RICE UNIVERSITY	NGL 44-006-033	Stebbing, R. F.	99	3222
HQ-PY	Quinn, H. B.	RICE UNIVERSITY	NGL 44-006-033	Stebbing, R. F.	99	3222
HQ-PY	Carter, C. H.	RICE UNIVERSITY	NGT 44-006-003	Gordon, W. E.	99	3231
HQ-PY	Carter, C. H.	RUTGERS U-N BRUNSWK	NGT 31-004-002	Torrey, H. C.	99	2677
HQ-PY	Carter, C. H.	ST LOUIS UNIVERSITY	NGT 26-006-001	Eigel, E. G., Jr.	99	2551
HQ-PY	Pohly, J. G.	SO CAROLINA ST COL	NGR 41-006-001	Payne, J. E.	13	3140
HQ-PY	Quinn, H. B.	SO DAKOTA SCHL MINES	NGL 42-001-004	Schleusener, R. A.	39	3147
HQ-PY	Vitale, J. A.	SO DAKOTA STATE UNIV	NGL 42-003-007	Myers, V. I.	49	3151
HQ-PY	Redding, E. R.	SOUTHERN METHODIST U	NGL 44-007-006	Denton, J. C.	99	3233
HQ-PY	Carter, C. H.	SOUTHERN METHODIST U	NGT 44-007-002	Albritton, C. C., Jr.	99	3239
HQ-PY	Pohly, J. G.	SO UNIV-BATON ROUGE	NGR 19-005-003	Johnson, J. A.	13	2107
HQ-PY	Pohly, J. G.	SO UNIV-BATON ROUGE	NGR 19-005-006	Chakkalakal, D. A.	11	2108
HQ-PY	Pohly, J. G.	SO UNIV-BATON ROUGE	NGR 19-005-008	Watson, M. M.	43	2109
HQ-PY		SO UNIV-BATON ROUGE	NGR 19-005-009		13	2110
HQ-PY	Pohly, J. G.	SO UNIV-NEW ORLEANS	NGR 19-014-001	Lucas, E. C.	39	2111
HQ-PY	Carter, C. H.	STANFORD UNIVERSITY	NGT 05-020-016	Moses, L.	99	1365
HQ-PY	Carter, C. H.	STANFORD UNIVERSITY	NGT 05-020-228	Pettit, J. M.	99	1366
HQ-PY	Carter, C. H.	STANFORD UNIVERSITY	NGT 05-020-295	Pettit, J. M.	99	1367
HQ-PY	Carter, C. H.	STANFORD UNIVERSITY	NGT 05-020-361	Pettit, J. M.	41	1368
HQ-PY	Carter, C. H.	STANFORD UNIVERSITY	NGT 05-020-409	Adams, J. L.	49	1369
HQ-PY	Carter, C. H.	STANFORD UNIVERSITY	NGT 05-020-412	Bershader, D.	49	1370
HQ-PY		STATE U NY-STONY BRK	NGL 33-015-036	Kao, Y. H.	11	2852
HQ-PY	Morris, J. D.	SYRACUSE UNIVERSITY	NGL 33-022-090	Barzelay, M. E.	79	2872
HQ-PY	Carter, C. H.	SYRACUSE UNIVERSITY	NGT 33-022-005	Hough, W. H.	99	2877
HQ-PY	Carter, C. H.	SYRACUSE UNIVERSITY	NGT 33-022-097	Honey, J. C.	99	2878
HQ-PY	Pohly, J. G.	TALLADEGA COLLEGE	NGR 01-007-001	George, M. C.	13	1029
HQ-PY	Carter, C. H.	TALLADEGA COLLEGE	NGR 01-007-004	Morrison, R. A.	13	1030
HQ-PY	Vitale, J. A.	TEXAS A&M UNIVERSITY	NGL 44-001-001	Rouse, J. W.	39	3262
HQ-PY	Carter, C. H.	TEXAS TECH UNIV	NGT 44-011-001	Graves, L.	99	3279
HQ-PY	Carter, C. H.	TULANE UNIVERSITY	NGT 19-002-002	Deener, D. R.	99	2118
HQ-PY	Pohly, J. G.	TUSKEGEE INSTITUTE	NGR 01-005-012	Terrill, G. R.	45	1033
HQ-PY	Redding, E. R.	UNIV ALA-HUNTSVILLE	NGL 01-008-001	Rush, J. E.	99	1073
HQ-PY	Redding, E. R.	UNIV ALA-TUSCALOOSA	NGL 01-002-064	Whitehurst, R.	99	1088
HQ-PY	Carter, C. H.	UNIV ALA-TUSCALOOSA	NGT 01-002-002	Rodgers, E.	99	1089

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-PY	Carter, C. H.	UNIV ALA-TUSCALOOSA	NGT 01-002-080	Raney, D. C.	49	1090
HQ-PY	Vitale, J. A.	UNIV ALASKA-FAIRBNKS	NGL 02-001-092	Belan, A. C.	39	1101
HQ-PY	Carter, C. H.	UNIV ALASKA-FAIRBNKS	NGT 02-001-007	Rae, K. M.	99	1108
HQ-PY	Vitale, J. A.	UNIV OF ARIZONA	NGL 03-002-313	Johnson, J. D.	39	1145
HQ-PY	Carter, C. H.	UNIV OF ARIZONA	NGT 03-002-008	Rhodes, H. D.	99	1171
HQ-PY	Quinn, H. B.	UNIV CALIF-BERKELEY	NGL 05-003-012	Anderson, K. A.	99	1394
HQ-PY	Redding, E. R.	UNIV CALIF-BERKELEY	NGL 05-003-012	Anderson, K. A.	99	1394
HQ-PY	Redding, E. R.	UNIV CALIF-BERKELEY	NGL 05-003-497	Anderson, K. A.	99	1406
HQ-PY	Carter, C. H.	UNIV CALIF-BERKELEY	NGT 05-003-023	Elberg, S. S.	99	1442
HQ-PY	Redding, E. R.	UNIV CALIF-L ANGELES	NGL 05-007-003	Libby, W. F.	99	1482
HQ-PY	Carter, C. H.	UNIV CALIF-L ANGELES	NGT 05-007-019	Libby, W. F.	99	1517
HQ-PY	Carter, C. H.	UNIV CALIF-SAN DIEGO	NGT 05-009-008	York, H. F.	99	1568
HQ-PY	Redding, E. R.	UNIV OF CHICAGO	NGL 14-001-258	Simpson, J. A.	99	1927
HQ-PY	Redding, E. R.-	UNIV OF CHICAGO	NGR 14-001-224	Simpson, J. A.	19	1943
HQ-PY	Carter, C. H.	UNIV OF CHICAGO	NGT 14-001-015	O'Connell, C. D.	99	1947
HQ-PY	Redding, E. R.	UNIV OF CINCINNATI	NGL 36-004-014	Guston, R. L.	99	2984
HQ-PY	Carter, C. H.	UNIV OF CINCINNATI	NGT 36-004-003	Wessel, R. H.	99	2993
HQ-PY	Vitale, J. A.	UNIV COLORADO-BOLDR	NGL 06-003-200	Ines, J. D.	39	1659
HQ-PY	Vitale, J. A.	UNIV COLORADO-BOLDR	NGR 06-003-160	Baird, J. R.	45	1663
HQ-PY	Carter, C. H.	UNIV OF DELAWARE	NGT 08-001-002	Kilpatrick, F. P.	99	1730
HQ-PY	Vitale, J. A.	UNIV OF DENVER	NGL 06-004-078	Ezra, A. A.	99	1680
HQ-PY	Quinn, H. B.	UNIV OF DENVER	NGL 06-004-078	Ezra, A. A.	99	1680
HQ-PY	Redding, E. R.	UNIV OF DENVER	NGL 06-004-096	Blackledge, J. P.	41	1681
HQ-PY	Carter, C. H.	UNIV OF DENVER	NGT 06-004-008	Evers, N. H.	99	1688
HQ-PY	Redding, E. R.	UNIV OF FLORIDA	NGL 10-005-005	Grinter, L. E.	99	1795
HQ-PY	Carter, C. H.	UNIV OF HAWAII	NGT 12-001-005	Gorter, W.	99	1879
HQ-PY	Redding, E. R.	UNIV OF HOUSTON	NGL 44-005-021	Allred, J. C.	99	3305
HQ-PY	Carter, C. H.	UNIV OF HOUSTON	NGT 44-005-114	Huang, C. J.	49	3320
HQ-PY	Carter, C. H.	UNIV OF HOUSTON	NGT 44-005-115	Huang, C. J.	49	3321
HQ-PY	Carter, C. H.	UNIV ILLINOIS-URBANA	NGT 14-005-017	Alpert, D.	99	1972
HQ-PY	Carter, C. H.	UNIV OF IOWA	NGT 16-001-004	Spriesterbach, D. C.	99	2046
HQ-PY	Redding, E. R.	UNIV OF KANSAS	NGL 17-002-001	Barr, B. G.	99	2057
HQ-PY	Quinn, H. B.	UNIV OF KANSAS	NGL 17-002-001	Barr, B. G.	99	2057
HQ-PY	Vitale, J. A.	UNIV OF KANSAS	NGL 17-004-024	Barr, B. G.	39	2058
HQ-PY		UNIV OF KANSAS	NGR 17-002-052	Vitale, J. A.	49	2060
HQ-PY	Carter, C. H.	UNIV OF KANSAS	NGT 17-002-006	Ellermeier, R. D.	99	2068
HQ-PY	Carter, C. H.	UNIV OF KANSAS	NGT 17-002-044	Smith, W. P.	99	2069
HQ-PY	Quinn, H. B.	UNIV MARYLAND-COL PK	NGL 21-002-008	Rheindolt, W. C.	99	2151
HQ-PY	Redding, E. R.	UNIV MARYLAND-COL PK	NGL 21-002-008	Rheindolt, W. C.	99	2151
HQ-PY	Carter, C. H.	UNIV MARYLAND-COL PK	NGT 21-002-254	Emad, F. P.	49	2197
HQ-PY	Pohly, J. G.	UNIV MD-EASTRN SHORE	NGR 21-119-002	Nagarajon, N.	41	2200
HQ-PY	Pohly, J. G.	UNIV MD-EASTRN SHORE	NGR 21-119-003	Singh, G.	31	2201
HQ-PY	Redding, E. R.	UNIV OF MIAMI	NGL 10-007-010	Man, E. H.	99	1807
HQ-PY	Quinn, H. B.	UNIV OF MIAMI	NGL 10-007-010	Man, E. H.	99	1807
HQ-PY	Morris, J. D.	UNIV OF MIAMI	NGR 10-007-070	Harvey, M. L.	76	1811
HQ-PY	Morris, J. D.	UNIV OF MIAMI	NGR 10-007-089	Harvey, M. L.	75	1813
HQ-PY	Carter, C. H.	UNIV OF MIAMI	NGT 10-007-077	Harvey, M. L.	99	1815
HQ-PY	Carter, C. H.	UNIV MICH-ANN ARBOR	NGT 23-005-018	Hay, G. E.	99	2481
HQ-PY	Vitale, J. A.	U MINN-MNPLS-ST PAUL	NGL 24-005-263	Cahill, L. J., Jr.	39	2511
HQ-PY	Carter, C. H.	U MINN-MNPLS-ST PAUL	NGT 24-005-012	Crawford, B., Jr.	99	2524
HQ-PY	Carter, C. H.	U MINN-MNPLS-ST PAUL	NGT 24-005-078	Anderson, G. W.	99	2525
HQ-PY	Vitale, J. A.	UNIV NEBRASKA-LINCLN	NGL 28-004-020	Drew, J. V.	39	2594
HQ-PY	Carter, C. H.	UNIV OF NEVADA-RENO	NGT 29-001-002	O'Brien, T. D.	99	2600
HQ-PY	Morris, J. D.	UNIV OF NEW MEXICO	NGL 32-004-042	Rosenthal, A. H.	75	2700
HQ-PY	Carter, C. H.	UNIV OF NEW MEXICO	NGT 32-004-004	Steger, A.	99	2706
HQ-PY	Quinn, H. B.	UNIV N CAR-CHPL HILL	NGL 34-003-040	Faust, R. G.	75	2920
HQ-PY	Carter, C. H.	UNIV N CAR-CHPL HILL	NGT 34-003-001	Ingram, J. C.	99	2923
HQ-PY	Carter, C. H.	UNIV OF NOTRE DAME	NGT 15-004-002	Beichner, P. E.	99	2018

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-PY		U OKLA-HEALTH CENTER	NGT 37-003-044		59	3005
HQ-PY	Carter, C. H.	UNIV OF PITTSBURGH	NGT 39-011-075	Stone, D. C.	99	3118
HQ-PY	Redding, E. R.	UNIV OF SOUTHERN CAL	NGL 05-018-044	Bichael, H.	99	1608
HQ-PY	Carter, C. H.	UNIV OF SOUTHERN CAL	NGT 05-018-085	Reining, H., Jr.	99	1617
HQ-PY	Carter, C. H.	UNIV OF SOUTHERN CAL	NGT 05-018-127	Kaprielian, Z. A.	49	1618
HQ-PY	Vitale, J. A.	UNIV SO MISSISSIPPI	NGL 25-005-007	Pinson, J. W.	39	2546
HQ-PY	Redding, E. R.	UNIV TENNESSEE-KNOXV	NGL 43-001-021	Thomas, C. O.	99	3166
HQ-PY	Redding, E. R.	UNIV TENNESSEE-KNOXV	NGL 43-001-021	Thomas, C. O.	99	3166
HQ-PY	Morris, J. D.	UNIV TENNESSEE-KNOXV	NGR 43-001-116	James, L. B.	75	3174
HQ-PY	Carter, C. H.	UNIV TENNESSEE-KNOXV	NGT 43-001-002	Smith, H. A.	99	3179
HQ-PY	Carter, C. H.	UNIV TEXAS-AUSTIN	NGT 44-012-009	Ellison, F. P.	99	3351
HQ-PY	Redding, E. R.	UNIV TEXAS-DALLAS	NGL 44-004-130	Johnson, F. S.	99	3375
HQ-PY	Carter, C. H.	UNIV OF VERMONT	NGT 46-001-001	Johnstone, D. B.	99	3428
HQ-PY	Redding, E. R.	UNIV OF VIRGINIA	NGL 47-005-014	Barnes, D. W.	42	3470
HQ-PY	Carter, C. H.	UNIV OF VIRGINIA	NGT 47-005-005	Whitehead, W. D.	99	3487
HQ-PY	Carter, C. H.	UNIV OF WASHINGTON	NGT 48-002-007	McCarthy, J. L.	99	3553
HQ-PY	Redding, E. R.	UNIV WISC-MADISON	NGL 50-002-001	Bock, R. M.	12	3577
HQ-PY	Vitale, J. A.	UNIV WISC-MADISON	NGL 50-002-114	Suomi, V. E.	39	3581
HQ-PY	Vitale, J. A.	UNIV WISC-MADISON	NGL 50-002-127	Clapp, J. L.	39	3582
HQ-PY		VIRGINIA STATE COL	NGL 47-014-009		21	3522
HQ-PY	Pohly, J. G.	VIRGINIA STATE COL	NGR 47-014-005	Agrawal, K. M.	41	3524
HQ-PY	Pohly, J. G.	VIRGINIA STATE COL	NGR 47-014-006	Shonoch, C. E.	13	3525
HQ-PY	Redding, E. R.	WASHINGTON UNIVERSTY	NGL 26-008-054	Morgan, R. P.	99	2578
HQ-PY	Carter, C. H.	WASHINGTON UNIVERSTY	NGT 26-008-005	Morrow, R. E.	99	2583
HQ-PY	Carter, C. H.	WAYNE STATE UNIV	NGT 23-006-001	Burnham, F. B.	99	2488
HQ-PY	Quinn, H. B.	WEST VIRGINIA UNIV	NGL 49-001-001	Wilson, M. F.	99	3554
HQ-PY	Redding, E. R.	WEST VIRGINIA UNIV	NGL 49-001-001	Wilson, M. F.	99	3554
HQ-PY	Carter, C. H.	XAVIER UNIV-LA	NGR 19-007-002	Fulwiler, J. H.	76	2119
HQ-PY	Redding, E. R.	YALE UNIVERSITY	NGR 07-004-029	Wildt, R.	13	1712
HQ-MA	Allenby, R. J.	BOSTON UNIVERSITY	NGR 22-004-027	Brewer, T.	32	2212
HQ-MA	Pomeroy, J. H.	CAL STATE U-LG BEACH	NGR 05-013-023	Green, J.	32	1246
HQ-MA	Allenby, R. J.	COLUMBIA UNIVERSITY	NGR 33-008-106	Dalziel, I. W.	32	2734
HQ-MA	Roberson, F. I.	DUDLEY OBSERVATORY	NGR 33-011-031	Mercer, R.	11	2790
HQ-MA	Pomeroy, J. H.	ILL INST OF TECH	NGR 14-004-049	Higgins, G. T.	39	1887
HQ-MA	Allenby, R. J.	PRINCETON UNIVERSITY	NGR 31-001-274	Phinney, R. A.	32	2667
HQ-MA	Pomeroy, J. H.	PURDUE UNIVERSITY	NGL 15-005-140	Lipschutz, M. E.	32	1995
HQ-MA	Allenby, R. J.	UNIV CALIF-SAN DIEGO	NGR 05-009-197	Waggoner, J. A.	12	1565
HQ-MA	Pomeroy, J. H.	UNIV MICH-ANN ARBOR	NGR 23-005-537	Evans, B. J.	32	2470
HQ-MA	Pomeroy, J. H.	UNIV OREGON-EUGENE	NGL 38-003-010	Goles, G. G.	32	3024
HQ-MA	Allenby, R. J.	YALE UNIVERSITY	NGL 07-004-103	Skinner, B. J.	32	1709
HQ-MM	Belleville, R. E.	AMERICAN UNIVERSITY	NGR 09-003-015	Ferster, C. B.	61	1734
HQ-MM	McKinney, V. L.	BOSTON UNIVERSITY	NGR 22-004-018	Fulton, G. P.	59	2208
HQ-MM	Deutsch, S.	BOSTON UNIVERSITY	NGR 22-004-018	Fulton, G. P.	59	2208
HQ-MM	Coburn, K. R.	CATHOLIC UNIVERSITY	NGR 09-005-022	Decicco, B. T.	51	1736
HQ-MM	Saunders, J. F.	CATHOLIC UNIVERSITY	NGR 09-005-022	Decicco, B. T.	51	1736
HQ-MM	Jones, W. L.	COLLEGE OF WM & MARY	NGR 47-006-054	Aceto, H., Jr.	51	3436
HQ-MM	Saunders, J. F.	COLORADO STATE UNIV	NGR 06-002-128	Lett, J. T.	51	1645
HQ-MM	Brownstein, H. S.	GEORGE WASHINGTON U	NSR 09-010-027	Schiff, H. I.	59	1764
HQ-MM	Belleville, R. E.	HARVARD UNIVERSITY	NGR 22-007-137	Kelleher, R. T.	61	2231
HQ-MM	Vinograd, S. P.	INDIANA U-BLOOMINGTN	NGL 15-003-117	Maickel, R. P.	52	1980
HQ-MM	Lang, R. H.	MASS INST OF TECH	NGL 22-009-156	Young, L. R.	59	2319
HQ-MM	Vinograd, S. P.	MASS INST OF TECH	NGL 22-009-156	Young, L. R.	59	2319
HQ-MM	Belleville, R. E.	MASS INST OF TECH	NGR 22-009-018	Schmitt, F. O.	52	2333
HQ-MM	Pecoraro, J. N.	MASS INST OF TECH	NGR 22-009-312	Reid, R. C.	12	2337
HQ-MM	Link, M. M.	OHIO STATE UNIV	NSR 36-008-108	Ellingson, H. V.	59	2980
HQ-MM	Brownstein, H.	OHIO STATE UNIV	NSR 36-008-108	Ellingson, H. V.	59	2980
HQ-MM		UNIV ARKANSAS-FAYETV	NGR 04-001-039	Pauly, J. E.	51	1174
HQ-MM		UNIV CALIF-DAVIS	NGL 05-004-002	Ingraham, J. L.	51	1454

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-MM	Saunders, J. F.	UNIV CALIF-SAN DIEGO	NGL 05-009-103	Baily, N. A.	51	1543
HQ-MM	Jones, W. L.	UNIV CALIF-SAN DIEGO	NGL 05-009-103	Baily, N. A.	51	1543
HQ-MM	Belleville, R. E.	UNIV OF KENTUCKY	NGL 18-001-003	Lange, K. O.	61	2073
HQ-MM	Saunders, J. F.	UNIV MARYLAND-COL PK	NGR 21-002-003	Melnik, W. L.	41	2158
HQ-MM	Saunders, J. F.	UNIV OF MASS-AMHERST	NGL 22-010-029	Nordin, J. H.	51	2399
HQ-MM	Saunders, J. F.	UNIV MO-COLUMBIA	NGR 26-004-084	Schiffman, R. H.	59	2559
HQ-MM	Belleville, R. E.	UNIV OF SOUTHERN CAL	NGL 05-018-003	Henry, J. P.	51	1607
HQ-MM	Saunders, J. F.	UNIV OF SOUTHERN CAL	NSR 05-018-087	Meehan, J. P.	59	1619
HQ-MM	Schmid, R. C.	UNIV OF VIRGINIA	NSR 47-005-070	Hendricks, E. H.	59	3488
HQ-MM	Saunders, J. F.	UNIV WISC-MADISON	NGR 50-002-109	Tibbitts, T. W.	51	3585
HQ-MM	Saunders, J. F.	VIRGINIA COMNWLTH U	NGL 47-002-005	Ham, W. T.	51	3489
HQ-MM	Jones, W. L.	VIRGINIA COMNWLTH U	NGL 47-002-005	Ham, W. T.	51	3489
HQ-MM	Jones, W. L.	VIRGINIA COMNWLTH U	NGR 47-002-018	Lippincott, S. W.	51	3491
HQ-MM	Saunders, J. F.	VIRGINIA COMNWLTH U	NGR 47-002-018	Lippincott, S. W.	51	3491
HQ-MR	Langford, J.	SYRACUSE UNIVERSITY	NGR 33-022-139	Drucker, E. E.	75	2875
HQ-MT		MASS INST OF TECH	NGR 22-009-735		13	2372
HQ-MT		NORTHWESTERN UNIV	NGR 14-007-069	Henize, K. G.	11	1897
HQ-MT	Schulherr, R. M.	PENNSYLVANIA STATE U	NGR 39-009-162	Kaplan, M. H.	41	3083
HQ-MT	Keith, E. L.	PENNSYLVANIA STATE U	NGR 39-009-162	Kaplan, M. H.	41	3083
HQ-MT	Schaefer, H.	PENNSYLVANIA STATE U	NGR 39-009-210	Kaplan, M. H.	41	3089
HQ-MT	Wild, J. W.	PENNSYLVANIA STATE U	NGR 39-009-210	Kaplan, M. H.	41	3089
HQ-MT	Redfield, M.	UNIV MARYLAND-COL PK	NGR 21-002-285	Alley, C. O.	19	2174
HQ-MT	Markey, M. F.	UNIV MARYLAND-COL PK	NGR 21-002-285	Alley, C. O.	19	2174
HQ-R		MASS INST OF TECH	NASW 2524		41	2305
HQ-RA	Roudebush, W. H.	CALIF INST OF TECH	NGL 05-002-002	Liepmann, H. W.	41	1194
HQ-RA	Gesson, A.	CALIF INST OF TECH	NGL 05-002-002	Liepmann, H. W.	41	1194
HQ-RA	Roudebush, W. H.	CATHOLIC UNIVERSITY	NGL 09-005-067	Ling, S. C.	41	1735
HQ-RA	Gessow, A.	CATHOLIC UNIVERSITY	NGL 09-005-067	Ling, S. C.	41	1735
HQ-RA	Gessow, A.	GEORGIA INST OF TECH	NGL 11-002-062	Huang, A. B.	41	1841
HQ-RA	Roudebush, W. H.	NEW YORK UNIVERSITY	NGL 33-016-149	Haydys, W. E.	46	2811
HQ-RA	Gessow, A.	OHIO STATE UNIV	NGL 36-008-117	Neren, R. M.	41	2967
HQ-RA		UNIV OF DELAWARE	NGR 08-001-016	Pellicciaro, E. J.	21	1728
HQ-RA	Rosenfeld, S. A.	UNIV OF GEORGIA	NGR 11-003-020	Adomian, G.	21	1861
HQ-RA	Gessow, A.	UNIV MARYLAND-COL PK	NGR 21-002-303	Melnik, W. L.	13	2178
HQ-RA	Gessow, A.	UNIV OF TORONTO	NGL 52-026-001	French, T. B.	41	3615
HQ-RD	Cherry, G. W.	MASS INST OF TECH	NASW 2412	Simpon, R.	99	2304
HQ-RE		AMERICAN UNIVERSITY	NASR 229		21	1732
HQ-RE		CORNELL UNIVERSITY	NGR 33-010-051	Tang, C. L.	13	2764
HQ-RE	Rosenfeld, S. A.	HARVARD UNIVERSITY	NGR 22-007-176	Book, R. V.	21	2235
HQ-RE	Rosenfeld, S. A.	MASS INST OF TECH	NASW 2276	Phillips, N.	21	2303
HQ-RE	Michaels, T. S.	MASS INST OF TECH	NGL 22-009-010	Markey, W. R.	49	2310
HQ-RE	Meson, J. K.	MASS INST OF TECH	NGL 22-009-013	Kennedy, R. S.	13	2311
HQ-RE	Rosenfeld, R. A.	MASS INST OF TECH	NGR 22-009-535	Guzman-Arenas, A.	99	2347
HQ-RE		OHIO STATE UNIV	NASR 141	Peters, H. J.	45	2962
HQ-RE	Janow, C.	PENNSYLVANIA STATE U	NGL 39-009-023	Shearer, J. L.	49	3075
HQ-RE	Janow, C.	STANFORD UNIVERSITY	NGL 05-020-073	Kalman, R. E.	49	1302
HQ-RE	Kurzahls, P. R.	UNIV OF CONNECTICUT	NGL 07-002-002	Lindorff, D. P.	41	1699
HQ-RE	Pontious, C. E.	UNIV MARYLAND-COL PK	NGR 21-002-270	Miller, J.	21	2173
HQ-RE	Michaels, T. S.	UNIV TEXAS-AUSTIN	NGL 44-012-008	Tapley, B. D.	42	3335
HQ-RL		STANFORD UNIVERSITY	NGL 05-020-275	Karamcheti, K.	13	1313
HQ-RM	Brandon, F. D.	NORTHWESTERN UNIV	NSR 14-007-103	Adnor, M. R.	99	1906
HQ-RM	Wisniewski, R. J.	NORTHWESTERN UNIV	NSR 14-007-103	Adnor, M. R.	99	1906
HQ-RO	Enders, J. H.	MASS INST OF TECH	NASW 2412	Simpon, R.	99	2304
HQ-RO	Charak, M. T.	VIRGINIA POLY INST	NGL 47-004-067	Tieleman, H. W.	49	3502
HQ-RP	Wasel, R. A.	CALIF INST OF TECH	NGL 05-002-005	Knauss, W. G.	13	1196
HQ-RP	Compitello, F.	PENNSYLVANIA STATE U	NSR 39-009-135	Lakshminarayana, B.	46	3095
HQ-RP	Levine, R. S.	PENNSYLVANIA STATE U	NSR 39-009-135	Lakshminarayana, B.	46	3095
HQ-RP	Lazar, J.	PRINCETON UNIVERSITY	NGL 31-001-005	Jahn, R. G.	42	2638

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HQ-RP	Mullin, J. P.	PRINCETON UNIVERSITY	NGL 31-001-005	Jahn, R. G.	42	2638
HQ-RP	Wasel, R. A.	UNIV OF UTAH	NGL 45-003-019	Baer, A. D.	12	3417
HQ-RP	Wasel, R. A.	UNIV OF UTAH	NGL 45-003-029	Williams, M. L.	13	3419
HQ-RP	Wasel, R. A.	UNIV OF UTAH	NGL 45-003-037	Devires, K. L.	46	3420
HQ-RR		KENT STATE UNIV	NSR 36-007-013	Brown, G. H.	47	2954
HQ-RR		NORTHWESTERN UNIV	NSR 14-007-037	Cambel, A. B.	13	1904
HQ-RR		UNIV ILLINOIS-URBANA	NGR 14-005-010	Worley, W. J.	19	1957
HQ-RV	Mark, C. P.	PURDUE UNIVERSITY	NSR 15-005-037	Dewitt, D. P.	46	2012
HQ-RW	Weinberg, I.	JOHNS HOPKINS UNIV	NGR 21-009-033	Feldman, C.	13	2141
HQ-RW	Gessow, A.	MASS INST OF TECH	NGL 22-009-014	Melcher, J. R.	41	2312
HQ-RW		PURDUE UNIVERSITY	NSR 15-005-037	Dewitt, D. P.	46	2012
HQ-RW		SOUTHERN METHODIST U	NGR 44-007-028	Walsh, J. E.	21	3235
HQ-RW	Weinberg, I.	STANFORD UNIVERSITY	NGL 05-020-242	Little, W. A.	13	1309
HQ-RW	Weinberg, I.	TULANE UNIVERSITY	NGL 19-002-027	Hermann, A. M.	13	2114
HQ-RW	Weinberg, I.	UNIV OF MAINE-ORONO	NGR 20-006-016	Clark, A. H.	13	2121
HQ-NS	Thom, K.	CITY COLLEGE OF N Y	NGL 33-013-034	Tchen, C. M.	13	2712
HQ-NS	Thom, K.	COLUMBIA UNIVERSITY	NGL 33-008-009	Novick, R.	12	2728
HQ-NS	Thom, K.	CORNELL UNIVERSITY	NGL 33-010-064	Cool, T. A.	13	2759
HQ-NS	Johnsen, E. G.	MASS INST OF TECH	NGR 22-009-658	Sheridan, T. B.	46	2361
HQ-NS	Miller, D. J.	MASS INST OF TECH	NGR 22-009-658	Sheridan, T. B.	46	2361
HQ-NS	Thom, K.	NO CAROLINA STATE U	NGL 34-002-017	Bennett, W. H.	13	2899
HQ-NS	Thom, K.	NO CAROLINA STATE U	NGR 34-002-177	Hassan, H.	13	2910
HQ-NS	Gavigan, F. X.	NORTHEASTERN UNIV	NGR 22-011-077	Nowak, W. B.	46	2387
HQ-NS	Schwenk, F. C.	NORTHEASTERN UNIV	NGR 22-011-077	Nowak, W. B.	46	2387
HQ-NS	Harrison, H. H.	PRINCETON UNIVERSITY	NGR 31-001-151	Kelly, A.	13	2650
HQ-NS	Gruber, M.	PRINCETON UNIVERSITY	NGR 31-001-185	Layton, J. P.	72	2653
HQ-NS	Schieb, W. S., Jr.	PRINCETON UNIVERSITY	NGR 31-001-185	Layton, J. P.	72	2653
HQ-NS	Gerstein, N.	PRINCETON UNIVERSITY	NGR 31-001-230	Kelly, A. J.	42	2660
HQ-NS	Schwenk, F. C.	PRINCETON UNIVERSITY	NGR 31-001-230	Kelly, A. J.	42	2660
HQ-NS	Harrison, H.	STANFORD UNIVERSITY	NGL 05-020-015	Fairbanks, W. M.	13	1301
HQ-NS	Harrison, H.	STEVENS INST OF TECH	NGL 31-003-020	Meissner, H.	13	2680
HQ-NS	Schwenk, F. C.	UNIV OF ARIZONA	NGL 03-002-006	Schultz, D. G.	45	1139
HQ-NS	Hintze, A. S.	UNIV OF ARIZONA	NGL 03-002-006	Schultz, D. G.	45	1139
HQ-NS	Harrison, H. H.	UNIV OF CHICAGO	NGL 14-001-009	Cohen, M.	99	1920
HQ-NS	Thom, K.	UNIV OF FLORIDA	NGL 10-005-089	Schneider, R. T.	13	1801
HQ-NS	Thom, K.	UNIV ILLINOIS-URBANA	NGR 14-005-183	Miley, G. H.	12	1966
HQ-NS	Fleishman, M. R.	UNIV OF WASHINGTON	NGL 48-002-044	Hertzberg, A.	13	3534
HQ-SB	Jacobs, G. J.	UNIV OF CHICAGO	NGL 14-001-012	Moran, H. F.	59	1922
HQ-SG	Hallenbeck, D. R.	BOSTON COLLEGE	NGR 22-003-017	Eather, R. H.	13	2202
HQ-SG	Schmerling, E. R.	BOSTON COLLEGE	NGR 22-003-017	Eather, R. H.	13	2202
HQ-SG		BOSTON UNIVERSITY	NGR 22-004-035		13	2214
HQ-SG	Kavanagh, L. D., Jr.	BRIGHAM YOUNG UNIV	NGR 45-001-011	Jones, D. E.	13	3410
HQ-SG	Schmerling, E. R.	BRIGHAM YOUNG UNIV	NGR 45-001-011	Jones, D. E.	13	3410
HQ-SG	Ott, E. J.	CALIF INST OF TECH	NGL 05-002-007	Neugebauer, G.	11	1197
HQ-SG	Roman, N. G.	CALIF INST OF TECH	NGL 05-002-007	Neugebauer, G.	11	1197
HQ-SG	Weldon, J. M.	CALIF INST OF TECH	NGL 05-002-034	Zirin, H.	11	1198
HQ-SG	Oertel, G. K.	CALIF INST OF TECH	NGL 05-002-034	Zirin, H.	11	1198
HQ-SG	Aucremanne, M. J.	CALIF INST OF TECH	NGL 05-002-134	Oke, J. B.	11	1202
HQ-SG	Roman, N. G.	CALIF INST OF TECH	NGL 05-002-134	Oke, J. B.	11	1202
HQ-SG	Boggess, N. W.	CALIF INST OF TECH	NGL 05-002-207	Neugebauer, G.	11	1208
HQ-SG	Roman, N. G.	CALIF INST OF TECH	NGL 05-002-207	Neugebauer, G.	11	1208
HQ-SG	Oertel, G. K.	CALIF INST OF TECH	NGR 05-002-142	Leighton, R. B.	11	1214
HQ-SG	Weldon, J. M.	CALIF INST OF TECH	NGR 05-002-142	Leighton, R. B.	11	1214
HQ-SG	Opp, A. G.	CALIF INST OF TECH	NGR 05-002-160	Vogt, R. E.	11	1218
HQ-SG	Kavanagh, L. D.	CALIF INST OF TECH	NGR 05-002-160	Vogt, R. E.	11	1218
HQ-SG	Burcher, E.	CALIF INST OF TECH	NGR 05-002-219	Garmire, G. P.	11	1221
HQ-SG	Roman, N. G.	CALIF INST OF TECH	NGR 05-002-219	Garmire, G. P.	11	1221
HQ-SG	Kelsall, T.	CALIF INST OF TECH	NGR 05-002-256	Thorne, K. S.	11	1227

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HQ-SG	Roman, N. G.	CALIF INST OF TECH	NGR 05-002-256	Thorne, K. S.	11	1227
HQ-SG	Schmerling, E. R.	CALIF INST OF TECH	NGR 05-002-259	Davis, L.	13	1228
HQ-SG	Kavanagh, L. D.	CALIF INST OF TECH	NGR 05-002-259	Davis, L.	13	1228
HQ-SG	Roman, N. G.	CALIF INST OF TECH	NGR 05-002-284	Garmire, G. P.	11	1230
HQ-SG	Ott, E. J.	CALIF INST OF TECH	NGR 05-002-284	Garmire, G. P.	11	1230
HQ-SG	Oertel, G. K.	CALIF INST OF TECH	NGR 05-002-294	Zirin, H.	11	1231
HQ-SG	Calahan, H. D.	CALIF INST OF TECH	NGR 05-002-294	Zirin, H.	11	1231
HQ-SG	Chase, R. H.	CALIF INST OF TECH	NSR 05-002-071	Zirin, H.	11	1238
HQ-SG	Oertel, G. K.	CALIF INST OF TECH	NSR 05-002-071	Zirin, H.	11	1238
HQ-SG	Dubin, M.	CAL STATE U-FULLERTN	NGR 05-071-002	Johnson, F. M.	11	1241
HQ-SG	Kavanagh, L. D.	CATHOLIC UNIVERSITY	NGR 09-005-063	Whang, Y. C.	13	1737
HQ-SG	Schmerling, E. R.	CATHOLIC UNIVERSITY	NGR 09-005-063	Whang, Y. C.	13	1737
HQ-SG	Ott, E. J.	COLUMBIA UNIVERSITY	NGR 33-008-102	Novick, R.	11	2733
HQ-SG	Roman, N. G.	COLUMBIA UNIVERSITY	NGR 33-008-102	Novick, R.	11	2733
HQ-SG	Oertel, G. K.	COLUMBIA UNIVERSITY	NGR 33-008-125	Novick, R.	11	2735
HQ-SG	Weldon, J. M.	COLUMBIA UNIVERSITY	NGR 33-008-125	Novick, R.	11	2735
HQ-SG	Roman, N. G.	COLUMBIA UNIVERSITY	NGR 33-008-158	Novick, R.	11	2737
HQ-SG	Bogges, N. W.	COLUMBIA UNIVERSITY	NGR 33-008-158	Novick, R.	11	2737
HQ-SG	Opp, A. G.	CORNELL UNIVERSITY	NGR 33-010-145	Greisen, K. I.	11	2771
HQ-SG	Roman, N. G.	CORNELL UNIVERSITY	NGR 33-010-145	Greisen, K. I.	11	2771
HQ-SG	Fellows, R. F.	CORNELL UNIVERSITY	NGR 33-010-161	Brice, N. M.	13	2773
HQ-SG	Hallenbeck, D. R.	CORNELL UNIVERSITY	NGR 33-010-161	Brice, N. M.	13	2773
HQ-SG	Schmerling, E. R.	DARTMOUTH COLLEGE	NGR 30-001-030	Morgan, M. G.	31	2605
HQ-SG	Kavanagh, L. D.	DARTMOUTH COLLEGE	NGR 30-001-030	Morgan, M. G.	31	2605
HQ-SG	Schmerling, E. R.	DARTMOUTH COLLEGE	NGR 30-001-040	Sonnerup, B. U.	13	2606
HQ-SG	Hallenbeck, D. R.	DARTMOUTH COLLEGE	NGR 30-001-040	Sonnerup, B. U.	13	2606
HQ-SG	Schmerling, E. R.	DARTMOUTH COLLEGE	NGR 30-001-041	Laaspere, T.	31	2607
HQ-SG	Hallenbeck, D. R.	DARTMOUTH COLLEGE	NGR 30-001-041	Laaspere, T.	31	2607
HQ-SG	Ott, E. J.	DUDLEY OBSERVATORY	NGL 33-011-001	Hemenway, C. L.	11	2788
HQ-SG	Dubin, M.	DUDLEY OBSERVATORY	NGL 33-011-001	Hemenway, C. L.	11	2788
HQ-SG	Dubin, M.	DUDLEY OBSERVATORY	NGR 33-011-017	Weinberg, J. L.	11	2789
HQ-SG	Dubin, M.	DUDLEY OBSERVATORY	NGR 33-011-043	Greenberg, J. M.	11	2791
HQ-SG	Roman, N. G.	FEDERAL CITY COLLEGE	NGR 09-050-010	McDowell, H.	11	1747
HQ-SG	Schmerling, E. R.	GRAMBLING COLLEGE	NGR 19-011-007	Cummings, W. D.	13	2080
HQ-SG	Kavanagh, L. D., Jr.	GRAMBLING COLLEGE	NGR 19-011-007	Cummings, W. D.	13	2080
HQ-SG	Weldon, J. W.	HARVARD UNIVERSITY	NGL 22-007-006	Goldberg, L.	11	2222
HQ-SG	Oertel, G. K.	HARVARD UNIVERSITY	NGL 22-007-006	Goldberg, L.	11	2222
HQ-SG	Oertel, G. K.	HARVARD UNIVERSITY	NGL 22-007-136	Dalgarno, O.	11	2228
HQ-SG	Weldon, J. M.	HARVARD UNIVERSITY	NGL 22-007-136	Dalgarno, O.	11	2228
HQ-SG	Weldon, J. M.	HARVARD UNIVERSITY	NGR 22-007-202	Goldberg, L.	11	2238
HQ-SG	Oertel, G. K.	HARVARD UNIVERSITY	NGR 22-007-202	Goldberg, L.	11	2238
HQ-SG	Weldon, J. M.	HARVARD UNIVERSITY	NGR 22-007-211	Goldberg, L.	11	2240
HQ-SG	Oertel, G. K.	HARVARD UNIVERSITY	NGR 22-007-211	Goldberg, L.	11	2240
HQ-SG	Bogges, N. W.	HAVERFORD COLLEGE	NGL 39-006-001	Greene, L. C.	11	3049
HQ-SG	Ott, E. J.	HAVERFORD COLLEGE	NGL 39-006-001	Greene, L. C.	11	3049
HQ-SG	Kelsall, T.	INDIANA U-BLOOMINGTN	NGL 15-003-002	Johnson, H. R.	11	1978
HQ-SG	Roman, N. G.	INDIANA U-BLOOMINGTN	NGL 15-003-002	Johnson, H. R.	11	1978
HQ-SG	Dubin, M.	JOHNS HOPKINS UNIV	NGR 21-001-001	Fastie, W. G.	19	2132
HQ-SG	Roman, N. G.	JOHNS HOPKINS UNIV	NGR 21-001-001	Fastie, W. G.	19	2132
HQ-SG	Roman, N. G.	JOHNS HOPKINS UNIV	NGR 21-001-084	Crosswhite, H. M.	11	2136
HQ-SG	Bogges, N. W.	JOHNS HOPKINS UNIV	NGR 21-001-084	Crosswhite, H. M.	11	2136
HQ-SG		JOHNS HOPKINS UNIV	NGR 21-001-119		32	2140
HQ-SG	Opp, A. G.	LA STATE U-BAT ROUGE	NGR 19-001-012	Huggett, R. W.	11	2099
HQ-SG	Kavanagh, L. D.	LA STATE U-BAT ROUGE	NGR 19-001-012	Huggett, R. W.	11	2099
HQ-SG	Roman, N. G.	MASS INST OF TECH	NGL 22-009-015	Bridge, H. S.	13	2313
HQ-SG	Kavanagh, L. D., Jr.	MASS INST OF TECH	NGL 22-009-015	Bridge, H. S.	13	2313
HQ-SG	Roman, N. G.	MASS INST OF TECH	NGR 22-009-366	Shapiro, I. I.	31	2340
HQ-SG	Kavanagh, L. D., Jr.	MASS INST OF TECH	NGR 22-009-372	Bridge, H. S.	13	2341

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HQ-SG	Schmerling, E. R.	MASS INST OF TECH	NGR 22-009-372	Bridge, H. S.	13	2341
HQ-SG	Roman, N. G.	MASS INST OF TECH	NGR 22-009-526	Weiss, R.	11	2346
HQ-SG	Bogges, N. W.	MASS INST OF TECH	NGR 22-009-526	Weiss, R.	11	2346
HQ-SG	Dubin, M.	MASS INST OF TECH	NGR 22-009-583	McCord, T. B.	11	2351
HQ-SG	Roman, N. G.	MASS INST OF TECH	NGR 22-009-785	Clark, G. W.	13	2375
HQ-SG	Kavanagh, L. D., Jr.	MASS INST OF TECH	NGR 22-009-786	Bridge, H. S.	13	2376
HQ-SG	Schmerling, E. R.	MASS INST OF TECH	NGR 22-009-786	Bridge, H. S.	13	2376
HQ-SG		MASS INST OF TECH	NSR 22-009-073	Kraushaar, W.	11	2378
HQ-SG	Bogges, N. W.	MASS INST OF TECH	NSR 22-009-654	Clark, G. W.	11	2379
HQ-SG	Roman, N. G.	MASS INST OF TECH	NSR 22-009-654	Clark, G. W.	11	2379
HQ-SG	Ashworth, C. D.	MONTANA STATE UNIV	NGR 27-001-040	Nordivedt, K., Jr.	11	2586
HQ-SG	Roman, N. G.	MONTANA STATE UNIV	NGR 27-001-040	Nordivedt, K., Jr.	11	2586
HQ-SG	Roman, N. G.	NEW MEX ST U-LAS CR	NGL 32-003-069	Liefeld, R. J.	11	2691
HQ-SG	Opp, A. G.	NEW MEX ST U-LAS CR	NGL 32-003-069	Liefeld, R. J.	11	2691
HQ-SG	Oertel, G. K.	NEW YORK INST TECH	NGR 33-230-002	Stroke, G. W.	11	2802
HQ-SG	Weldon, J. M.	NEW YORK INST TECH	NGR 33-230-002	Stroke, G. W.	11	2802
HQ-SG	Dubin, M.	NO CAROLINA STATE U	NGL 34-002-042	Manring, E. R.	11	2901
HQ-SG	Miller, R.	NO CAROLINA STATE U	NGL 34-002-042	Manring, E. R.	11	2901
HQ-SG	Roman, N. G.	NORTHWESTERN UNIV	NGL 14-007-041	Huang, S. S.	11	1892
HQ-SG	Bogges, N. W.	NORTHWESTERN UNIV	NGL 14-007-041	Huang, S. S.	11	1892
HQ-SG	Roman, N. G.	NORTHWESTERN UNIV	NGR 14-007-122	Bahng, J. D.	11	1901
HQ-SG	Calahan, D.	NORTHWESTERN UNIV	NGR 14-007-122	Bahng, J. D.	11	1901
HQ-SG		NORTHWESTERN UNIV	NSR 14-007-050	Henize, K. G.	11	1905
HQ-SG	Schmerling, E. R.	PENNSYLVANIA STATE U	NGL 39-009-002	Ross, W. J.	13	3070
HQ-SG	Kavanagh, L. D.	PENNSYLVANIA STATE U	NGL 39-009-002	Ross, W. J.	13	3070
HQ-SG	Hallenbeck, D. R.	PENNSYLVANIA STATE U	NGL 39-009-003	Nisbet, J. S.	31	3071
HQ-SG	Schmerling, E. R.	PENNSYLVANIA STATE U	NGL 39-009-003	Nisbet, J. S.	31	3071
HQ-SG	Schmerling, E. R.	PENNSYLVANIA STATE U	NGL 39-009-032	Kendall, R. F.	31	3076
HQ-SG	Ott, E. J.	PENNSYLVANIA STATE U	NGL 39-009-032	Kendall, R. F.	31	3076
HQ-SG	Ott, E. J.	PENNSYLVANIA STATE U	NGR 39-009-218	Hale, L. C.	31	3090
HQ-SG	Schmerling, E. R.	PENNSYLVANIA STATE U	NGR 39-009-218	Hale, L. C.	31	3090
HQ-SG	Schmerling, E. R.	POLY INST BROOKLYN	NGR 33-006-047	Gross, A. H.	31	2824
HQ-SG	Kavanagh, L. D., Jr.	POLY INST BROOKLYN	NGR 33-006-047	Gross, A. H.	31	2824
HQ-SG	Roman, N. G.	PRINCETON UNIVERSITY	NGL 31-001-007	Spitzer, L., Jr.	11	2639
HQ-SG	Bogges, N. W.	PRINCETON UNIVERSITY	NGL 31-001-007	Spitzer, L., Jr.	11	2639
HQ-SG	Roman, N. G.	PRINCETON UNIVERSITY	NGR 31-001-001	Danielson, R. E.	11	2647
HQ-SG	Holtz, J. R.	PRINCETON UNIVERSITY	NGR 31-001-001	Danielson, R. E.	11	2647
HQ-SG	Aucremanne, M. J.	PRINCETON UNIVERSITY	NGR 31-001-142	Danielson, R. E.	11	2649
HQ-SG	Sures, A. H.	PRINCETON UNIVERSITY	NGR 31-001-142	Danielson, R. E.	11	2649
HQ-SG	Sures, A. H.	PRINCETON UNIVERSITY	NGR 31-001-236	Spitzer, L., Jr.	11	2661
HQ-SG	Aucremanne, M. J.	PRINCETON UNIVERSITY	NGR 31-001-236	Spitzer, L., Jr.	11	2661
HQ-SG	Aucremanne, M. J.	PRINCETON UNIVERSITY	NSR 31-001-127	Spitzer, L.	11	2672
HQ-SG	Roman, N. G.	PRINCETON UNIVERSITY	NSR 31-001-127	Spitzer, L.	11	2672
HQ-SG	Sures, A. H.	PRINCETON UNIVERSITY	NSR 31-001-259	Morton, D. C.	11	2673
HQ-SG	Aucremanne, M. J.	PRINCETON UNIVERSITY	NSR 31-001-259	Morton, D. C.	11	2673
HQ-SG	Ott, E. J.	PRINCETON UNIVERSITY	NSR 31-001-901	Lowrance, J. L.	11	2675
HQ-SG	Roman, N. G.	PRINCETON UNIVERSITY	NSR 31-001-901	Lowrance, J. L.	11	2675
HQ-SG	Roman, N. G.	PURDUE UNIVERSITY	NGL 15-005-003	Andrew, K. L.	11	1992
HQ-SG	Oertel, G.	PURDUE UNIVERSITY	NGL 15-005-003	Andrew, K. L.	11	1992
HQ-SG	Dubin, M.	RENSSELAER POLY-NY	NGL 33-018-017	Hudson, J. B.	11	2834
HQ-SG	Kavanagh, L. D.	RICE UNIVERSITY	NGL 44-006-012	Stebbins, R. F.	13	3221
HQ-SG	Schmerling, E. R.	RICE UNIVERSITY	NGL 44-006-012	Stebbins, R. F.	13	3221
HQ-SG	Schmerling, E. R.	RICE UNIVERSITY	NGR 44-006-137	Dessler, A. J.	13	3224
HQ-SG	Kavanagh, L. D., Jr.	RICE UNIVERSITY	NGR 44-006-137	Dessler, A. J.	13	3224
HQ-SG	Dubin, M.	RUTGERS UNIV-NEWARK	NGR 31-004-049	Carroll, B.	11	2678
HQ-SG	McDonald, M. E.	RUTGERS UNIV-NEWARK	NGR 31-004-049	Carroll, B.	11	2678
HQ-SG	Hallenbeck, D. R.	STANFORD UNIVERSITY	NGL 05-020-008	Helliwell, R. A.	13	1299
HQ-SG	Schmerling, E. R.	STANFORD UNIVERSITY	NGL 05-020-008	Helliwell, R. A.	13	1299

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HQ-SG	Schmerling, E. R.	STANFORD UNIVERSITY	NGL 05-020-014	Von Eshleman, V. R.	31	1300
HQ-SG	Hallenbeck, D. R.	STANFORD UNIVERSITY	NGL 05-020-176	Crawford, F. W.	31	1306
HQ-SG	Schmerling, E. R.	STANFORD UNIVERSITY	NGL 05-020-176	Crawford, F. W.	31	1306
HQ-SG	Weldon, J. M.	STANFORD UNIVERSITY	NGL 05-020-272	Sturrock, P. A.	11	1312
HQ-SG	Oertel, G. K.	STANFORD UNIVERSITY	NGL 05-020-272	Sturrock, P. A.	11	1312
HQ-SG	Hallenbeck, D. R.	STANFORD UNIVERSITY	NGR 05-020-001	Darosa, A. V.	31	1321
HQ-SG	Schmerling, E. R.	STANFORD UNIVERSITY	NGR 05-020-001	Darosa, A. V.	31	1321
HQ-SG	Ott, E. J.	STANFORD UNIVERSITY	NGR 05-020-066	Spicer, W. E.	11	1324
HQ-SG	Roman, N. G.	STANFORD UNIVERSITY	NGR 05-020-066	Spicer, W. E.	11	1324
HQ-SG	Kavanagh, L. D., Jr.	STANFORD UNIVERSITY	NGR 05-020-288	Helliwell, R. A.	31	1326
HQ-SG	Schmerling, E. R.	STANFORD UNIVERSITY	NGR 05-020-288	Helliwell, R. A.	31	1326
HQ-SG	Kavanagh, L. D., Jr.	STANFORD UNIVERSITY	NGR 05-020-330	Spreiter, J. R.	13	1327
HQ-SG	Schmerling, E. R.	STANFORD UNIVERSITY	NGR 05-020-330	Spreiter, J. R.	13	1327
HQ-SG	Hallenbeck, D. R.	STANFORD UNIVERSITY	NGR 05-020-407	Craft, T. A.	39	1331
HQ-SG	Schmerling, E. R.	STANFORD UNIVERSITY	NGR 05-020-407	Craft, T. A.	39	1331
HQ-SG	Opp, A. G.	STANFORD UNIVERSITY	NGR 05-020-452	Hofstadter, R.	11	1333
HQ-SG	Kavanagh, L. D.	STANFORD UNIVERSITY	NGR 05-020-452	Hofstadter, R.	11	1333
HQ-SG	Roman, N. G.	STANFORD UNIVERSITY	NGR 05-020-510	Petrosian, V.	11	1336
HQ-SG	Boggess, N. W.	STANFORD UNIVERSITY	NGR 05-020-510	Petrosian, V.	11	1336
HQ-SG	Weldon, J. M.	STANFORD UNIVERSITY	NGR 05-020-512	Sturrock, P.	11	1337
HQ-SG	Oertel, G. K.	STANFORD UNIVERSITY	NGR 05-020-512	Sturrock, P.	11	1337
HQ-SG	Oertel, G. K.	STANFORD UNIVERSITY	NGR 05-020-559	Wilcox, J.	11	1345
HQ-SG	Weldon, J. M.	STANFORD UNIVERSITY	NGR 05-020-559	Wilcox, J.	11	1345
HQ-SG	Weldon, J. M.	STATE U NY-STONY BRK	NGR 33-015-068	Stroke, G. W.	13	2857
HQ-SG	Kelsall, T.	ST U NY COL-GENESCO	NGR 33-219-002	Meisel, D. D.	11	2870
HQ-SG	Roman, N. G.	ST U NY COL-GENESCO	NGR 33-219-002	Meisel, D. D.	11	2870
HQ-SG	Hallenbeck, D. R.	TEMPLE UNIVERSITY	NGR 39-012-001	Bohn, J. L.	11	3097
HQ-SG	Dubin, M.	TEMPLE UNIVERSITY	NGR 39-012-001	Bohn, J. L.	11	3097
HQ-SG	Kavanagh, L. D.	UNIV ALASKA-FAIRBNKS	NGR 02-001-001	Akasofu, S. I.	13	1102
HQ-SG	Hallenbeck, D. R.	UNIV ALASKA-FAIRBNKS	NGR 02-001-001	Akasofu, S. I.	13	1102
HQ-SG	Kavanagh, L. D.	UNIV ALASKA-FAIRBNKS	NGR 02-001-087	Davis, T. N.	13	1103
HQ-SG	Dubin, M.	UNIV ALASKA-FAIRBNKS	NGR 02-001-088	Wescott, E. M.	31	1104
HQ-SG	Kavanagh, L. D., Jr.	UNIV ALASKA-FAIRBNKS	NGR 02-001-088	Wescott, E. M.	31	1104
HQ-SG	Dubin, M.	UNIV ALASKA-FAIRBNKS	NGR 02-001-094	Romick, G. J.	31	1106
HQ-SG	Aucremagne, M. J.	UNIV OF ARIZONA	NASW 2283	Meinel, A. B.	42	1137
HQ-SG	Chase, R. H.	UNIV OF ARIZONA	NASW 2283	Meinel, A. B.	42	1137
HQ-SG	Oertel, G. K.	UNIV OF ARIZONA	NGL 03-002-017	Bickel, W.	11	1140
HQ-SG	Roman, N. G.	UNIV OF ARIZONA	NGL 03-002-017	Bickel, W.	11	1140
HQ-SG	Dubin, M.	UNIV OF ARIZONA	NGL 03-002-081	Gehrels, A. M.	11	1142
HQ-SG	Opp, A. G.	UNIV OF ARIZONA	NGR 03-002-071	Bowen, T.	11	1146
HQ-SG	Kavanagh, L. D.	UNIV OF ARIZONA	NGR 03-002-071	Bowen, T.	11	1146
HQ-SG	Schmerling, E. R.	UNIV OF ARIZONA	NGR 03-002-107	Fan, C. Y.	13	1147
HQ-SG	Kavanagh, L. D., Jr.	UNIV OF ARIZONA	NGR 03-002-107	Fan, C. Y.	13	1147
HQ-SG	Ashworth, C. D.	UNIV OF ARIZONA	NGR 03-002-193	Gehrels, A. M.	11	1153
HQ-SG	Roman, N. G.	UNIV OF ARIZONA	NGR 03-002-193	Gehrels, A. M.	11	1153
HQ-SG	Boggess, N. W.	UNIV OF ARIZONA	NGR 03-002-258	Kuiper, G. P.	11	1158
HQ-SG	Boggess, N. W.	UNIV OF ARIZONA	NGR 03-002-269	Low, F. J.	11	1159
HQ-SG	Roman, N. G.	UNIV OF ARIZONA	NGR 03-002-269	Low, F. J.	11	1159
HQ-SG	Boggess, N. W.	UNIV OF ARIZONA	NGR 03-002-277	Low, F. J.	11	1163
HQ-SG	Sobieski, S.	UNIV OF ARIZONA	NGR 03-002-309	Weymann, R. J.	11	1164
HQ-SG	Aucremagne, M. J.	UNIV OF ARIZONA	NGR 03-002-309	Weymann, R. J.	11	1164
HQ-SG	Hallenbeck, D. R.	UNIV OF AUCLAND	NGR 52-001-001	Titheridge, J. E.	31	3624
HQ-SG	Schmerling, E. R.	UNIV OF AUCLAND	NGR 52-001-001	Titheridge, J. E.	31	3624
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-BERKELEY	NGL 05-003-017	Anderson, K. A.	13	1396
HQ-SG	Schmerling, E. R.	UNIV CALIF-BERKELEY	NGL 05-003-017	Anderson, K. A.	13	1396
HQ-SG	Boggess, N. W.	UNIV CALIF-BERKELEY	NGL 05-003-230	Silver, S.	13	1400
HQ-SG	Oertel, G. K.	UNIV CALIF-BERKELEY	NGL 05-003-230	Silver, S.	13	1400
HQ-SG	Roman, N. G.	UNIV CALIF-BERKELEY	NGL 05-003-272	Tounes, C. H.	19	1401

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HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-BERKELEY	NGR 05-003-239	Anderson, K. A.	13	1409
HQ-SG	Ott, E. J.	UNIV CALIF-BERKELEY	NGR 05-003-239	Anderson, K. A.	13	1409
HQ-SG	Dubin, M.	UNIV CALIF-BERKELEY	NGR 05-003-309	Cunningham, L. E.	31	1411
HQ-SG	Opp, A. G.	UNIV CALIF-BERKELEY	NGR 05-003-376	Price, P. B.	11	1412
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-BERKELEY	NGR 05-003-376	Price, P. B.	11	1412
HQ-SG	Roman, N. G.	UNIV CALIF-BERKELEY	NGR 05-003-402	Townes, C. H.	11	1413
HQ-SG	Bogges, N. W.	UNIV CALIF-BERKELEY	NGR 05-003-402	Townes, C. H.	11	1413
HQ-SG	Dubin, M.	UNIV CALIF-BERKELEY	NGR 05-003-445	Mozer, F. S.	31	1419
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-BERKELEY	NGR 05-003-445	Mozer, F. S.	31	1419
HQ-SG	Ott, E. J.	UNIV CALIF-BERKELEY	NGR 05-003-450	Bowyer, C. S.	11	1421
HQ-SG	Bogges, N. W.	UNIV CALIF-BERKELEY	NGR 05-003-450	Bowyer, C. S.	11	1421
HQ-SG	Kelsall, T.	UNIV CALIF-BERKELEY	NGR 05-003-453	Silk, J. I.	11	1424
HQ-SG	Roman, N. G.	UNIV CALIF-BERKELEY	NGR 05-003-453	Silk, J. I.	11	1424
HQ-SG	Hallenbeck, D. R.	UNIV CALIF-BERKELEY	NGR 05-003-480	Mozer, F. S.	13	1432
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-BERKELEY	NGR 05-003-480	Mozer, F. S.	13	1432
HQ-SG	Weldon, J. M.	UNIV CALIF-BERKELEY	NGR 05-003-499	Phillips, J. G.	11	1434
HQ-SG	Oertel, G. K.	UNIV CALIF-BERKELEY	NGR 05-003-499	Phillips, J. G.	11	1434
HQ-SG	Weldon, J. M.	UNIV CALIF-BERKELEY	NGR 05-003-510	Anderson, K. A.	11	1435
HQ-SG	Oertel, G. K.	UNIV CALIF-BERKELEY	NGR 05-003-510	Anderson, K. A.	11	1435
HQ-SG	Opp, A. G.	UNIV CALIF-BERKELEY	NGR 05-003-553	Alvarez, L. W.	11	1439
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-BERKELEY	NGR 05-003-553	Alvarez, L. W.	11	1439
HQ-SG	Schmerling, E. R.	UNIV CALIF-BERKELEY	NGR 05-007-305	Coleman, P. J., Jr.	13	1441
HQ-SG	Hallenbeck, D.	UNIV CALIF-BERKELEY	NGR 05-007-305	Coleman, P. J., Jr.	13	1441
HQ-SG		UNIV CALIF-DAVIS	NGR 05-004-006	Hurley, J. P.	32	1457
HQ-SG	Kavanagh, L. D.	UNIV CALIF-L ANGELES	NGL 05-007-004	Coleman, P. J.	13	1483
HQ-SG	Schmerling, E. R.	UNIV CALIF-L ANGELES	NGL 05-007-004	Coleman, P. J.	13	1483
HQ-SG	Oertel, G. K.	UNIV CALIF-L ANGELES	NGL 05-007-046	Alley, L. H.	11	1486
HQ-SG	Kavanagh, L. D.	UNIV CALIF-L ANGELES	NGL 05-007-190	Kennel, C. F.	13	1488
HQ-SG	Schmerling, E. R.	UNIV CALIF-L ANGELES	NGL 05-007-190	Kennel, C. F.	13	1488
HQ-SG	Hallenbeck, D. R.	UNIV CALIF-L ANGELES	NGR 05-007-276	Holzer, R. E.	31	1499
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-L ANGELES	NGR 05-007-276	Holzer, R. E.	31	1499
HQ-SG	Hallenbeck, D.	UNIV CALIF-L ANGELES	NGR 05-007-304	Siscol, G. L.	13	1504
HQ-SG	Schmerling, E. R.	UNIV CALIF-L ANGELES	NGR 05-007-304	Siscol, G. L.	13	1504
HQ-SG	Kavanagh, L. D.	UNIV CALIF-RIVERSIDE	NGR 05-008-022	White, R. S.	11	1521
HQ-SG	Opp, A. G.	UNIV CALIF-RIVERSIDE	NGR 05-008-022	White, R. S.	11	1521
HQ-SG	Opp, A. G.	UNIV CALIF-SAN DIEGO	NGL 05-005-003	Peterson, L. E.	11	1535
HQ-SG	Roman, N. G.	UNIV CALIF-SAN DIEGO	NGL 05-005-003	Peterson, L. E.	11	1535
HQ-SG	Bogges, N. W.	UNIV CALIF-SAN DIEGO	NGL 05-005-004	Burbidge, G. R.	11	1536
HQ-SG	Roman, N. G.	UNIV CALIF-SAN DIEGO	NGL 05-005-004	Burbidge, G. R.	11	1536
HQ-SG	Kavanagh, L. D.	UNIV CALIF-SAN DIEGO	NGL 05-005-007	Mellwain, C. E.	13	1537
HQ-SG	Schmerling, E. R.	UNIV CALIF-SAN DIEGO	NGL 05-005-007	Mellwain, C. E.	13	1537
HQ-SG	Roman, N. G.	UNIV CALIF-SAN DIEGO	NGL 05-009-230	Gillet, F. C.	11	1548
HQ-SG	Bogges, N. W.	UNIV CALIF-SAN DIEGO	NGL 05-009-230	Gillet, F. C.	11	1548
HQ-SG	Schmerling, E. R.	UNIV CALIF-SAN DIEGO	NGR 05-009-075	Helstrom, C. W.	13	1551
HQ-SG	Hallenbeck, D. R.	UNIV CALIF-SAN DIEGO	NGR 05-009-075	Helstrom, C. W.	13	1551
HQ-SG	Hallenbeck, D. R.	UNIV CALIF-SAN DIEGO	NGR 05-009-076	Fejer, J. A.	31	1552
HQ-SG	Schmerling, E. R.	UNIV CALIF-SAN DIEGO	NGR 05-009-076	Fejer, J. A.	31	1552
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-SAN DIEGO	NGR 05-009-081	Axford, W. I.	13	1553
HQ-SG	Schmerling, E. R.	UNIV CALIF-SAN DIEGO	NGR 05-009-081	Axford, W. I.	13	1553
HQ-SG	Dubin, M.	UNIV CALIF-SAN DIEGO	NGR 05-009-110	Alfven, H.	11	1555
HQ-SG	Schmerling, E. R.	UNIV CALIF-SAN DIEGO	NGR 05-009-180	Daryenik, J. R.	39	1561
HQ-SG	Kavanagh, L. D., Jr.	UNIV CALIF-SAN DIEGO	NGR 05-009-180	Daryenik, J. R.	39	1561
HQ-SG	Aucremann, M. J.	UNIV CALIF-SAN DIEGO	NGR 05-009-188	Mellwain, C. E.	11	1562
HQ-SG	Ott, E. J.	UNIV CALIF-S CRUZ	NGR 05-061-006	Wampler, E. J.	11	1581
HQ-SG	Roman, N. G.	UNIV CALIF-S CRUZ	NGR 05-061-006	Wampler, E. J.	11	1581
HQ-SG	Aucremann, M. J.	UNIV CALIF-S CRUZ	NGR 05-061-014	Wampler, E. J.	11	1582
HQ-SG	Roman, N. G.	UNIV CALIF-S CRUZ	NGR 05-061-014	Wampler, E. J.	11	1582
HQ-SG	Bogges, N. W.	UNIV CALIF-S CRUZ	NGR 05-061-015	Rank, D. M.	11	1583

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SG	Roman, N. G.	UNIV CALIF-S CRUZ	NGR 05-061-015	Rank, D. M.	11	1582
HQ-SG	Kavanagh, L. D.	UNIV OF CHICAGO	NGL 14-001-001	Parker, E. N.	11	1917
HQ-SG	Opp, A. G.	UNIV OF CHICAGO	NGL 14-001-001	Parker, E. N.	11	1917
HQ-SG	Opp, A. G.	UNIV OF CHICAGO	NGL 14-001-005	Meyer, P.	11	1918
HQ-SG	Kavanagh, L. D.	UNIV OF CHICAGO	NGL 14-001-005	Meyer, P.	11	1918
HQ-SG	Kavanagh, L. D.	UNIV OF CHICAGO	NGL 14-001-006	Simpson, J. A.	11	1919
HQ-SG	Opp, A. G.	UNIV OF CHICAGO	NGL 14-001-006	Simpson, J. A.	11	1919
HQ-SG	Dubin, M.	UNIV OF CHICAGO	NGL 14-001-060	O'Dell, C. R.	11	1923
HQ-SG	Boggess, N. W.	UNIV OF CHICAGO	NGL 14-001-060	O'Dell, C. R.	11	1923
HQ-SG	Roman, N. G.	UNIV OF CHICAGO	NGR 14-001-147	Hobbs, L. M.	11	1930
HQ-SG	Kelsall, T.	UNIV OF CHICAGO	NGR 14-001-147	Hobbs, L. M.	11	1930
HQ-SG	Weldon, J. M.	UNIV OF CHICAGO	NGR 14-001-164	Blake, R. L.	11	1932
HQ-SG	Oertel, G. K.	UNIV OF CHICAGO	NGR 14-001-164	Blake, R. L.	11	1932
HQ-SG	Schmerling, E. R.	UNIV OF CHICAGO	NGR 14-001-188	Simpson, J. A.	13	1935
HQ-SG	Hallenbeck, D.	UNIV OF CHICAGO	NGR 14-001-188	Simpson, J. A.	13	1935
HQ-SG	Boggess, N. W.	UNIV OF CHICAGO	NGR 14-001-190	Odell, C. R.	11	1936
HQ-SG	Weldon, J. M.	UNIV COLORADO-BOLDR	NGL 06-003-057	Smith, S. J.	11	1657
HQ-SG	Oertel, G. K.	UNIV COLORADO-BOLDR	NGL 06-003-057	Smith, S. J.	11	1657
HQ-SG	Fellows, R.	UNIV COLORADO-BOLDR	NGL 06-003-064	Barth, C. A.	31	1658
HQ-SG	Dubin, M.	UNIV COLORADO-BOLDR	NGL 06-003-064	Barth, C. A.	31	1658
HQ-SG	Weldon, J. M.	UNIV COLORADO-BOLDR	NGR 06-003-069	Rense, W. A.	11	1660
HQ-SG	Ott, E. J.	UNIV COLORADO-BOLDR	NGR 06-003-069	Rense, W. A.	11	1660
HQ-SG	Schardt, A. W.	UNIV COLORADO-BOLDR	NGR 06-003-092	Speiser, T. W.	13	1661
HQ-SG	Kavanagh, L. D.	UNIV COLORADO-BOLDR	NGR 06-003-092	Speiser, T. W.	13	1661
HQ-SG	Roman, N. G.	UNIV COLORADO-BOLDR	NGR 06-003-176	Lillie, C. F.	11	1662
HQ-SG	Ott, E. J.	UNIV COLORADO-BOLDR	NGR 06-003-176	Lillie, C. F.	11	1662
HQ-SG	Kelsall, T.	UNIV COLORADO-BOLDR	NGR 06-003-179	Lillie, C. F.	11	1666
HQ-SG	Roman, N. G.	UNIV COLORADO-BOLDR	NGR 06-003-179	Lillie, C. F.	11	1666
HQ-SG		UNIV COLORADO-BOLDR	NGR 06-003-185		11	1669
HQ-SG	Kavanagh, L. D., Jr.	UNIV OF DENVER	NGR 06-004-058	Patel, V. L.	13	1682
HQ-SG	Schmerling, E. R.	UNIV OF DENVER	NGR 06-004-058	Patel, V. L.	13	1682
HQ-SG	Schmerling, E. R.	UNIV OF DENVER	NGR 06-004-060	Roederer, J. G.	13	1683
HQ-SG	Kavanagh, L. D.	UNIV OF DENVER	NGR 06-004-060	Roederer, J. G.	13	1683
HQ-SG	Oertel, G. K.	UNIV OF FLORIDA	NGL 10-005-049	Schneider, R. T.	49	1799
HQ-SG	Hallenbeck, D. R.	UNIV OF FLORIDA	NGR 10-005-176	Carr, T. D.	11	1805
HQ-SG	Roman, N. G.	UNIV OF FLORIDA	NGR 10-005-176	Carr, T. D.	11	1805
HQ-SG	Oertel, G. K.	UNIV OF HAWAII	NGL 12-001-011	Jefferies, J. T.	11	1870
HQ-SG	Weldon, J. M.	UNIV OF HAWAII	NGL 12-001-011	Jefferies, J. T.	11	1870
HQ-SG	Weldon, J. M.	UNIV OF HAWAII	NGR 12-001-075	Jefferies, J. T.	11	1874
HQ-SG	Oertel, G. K.	UNIV OF HAWAII	NGR 12-001-075	Jefferies, J. T.	11	1874
HQ-SG	Boggess, N. W.	UNIV OF HAWAII	NGR 12-001-111	Jefferies, J. T.	11	1878
HQ-SG	Roman, N. G.	UNIV OF HAWAII	NGR 12-001-111	Jefferies, J. T.	11	1878
HQ-SG	Schmerling, E. R.	UNIV OF HOUSTON	NGR 44-005-133	Sheldon, W. R.	31	3315
HQ-SG	Holtz, J. R.	UNIV OF HOUSTON	NGR 44-005-133	Sheldon, W. R.	31	3315
HQ-SG	Hallenbeck, D. R.	UNIV ILLINOIS-URBANA	NGR 14-005-002	Yen, K. C.	31	1955
HQ-SG	Schmerling, E. R.	UNIV ILLINOIS-URBANA	NGR 14-005-002	Yen, K. C.	31	1955
HQ-SG	Schmerling, E. R.	UNIV ILLINOIS-URBANA	NGR 14-005-009	Deschamps, G. A.	99	1956
HQ-SG	Opp, A. G.	UNIV ILLINOIS-URBANA	NGR 14-005-009	Deschamps, G. A.	99	1956
HQ-SG	Eaton, P. T.	UNIV ILLINOIS-URBANA	NGR 14-005-013	Bowhill, S. A.	31	1958
HQ-SG	Schmerling, E. R.	UNIV ILLINOIS-URBANA	NGR 14-005-013	Bowhill, S. A.	31	1958
HQ-SG	Schmerling, E. R.	UNIV ILLINOIS-URBANA	NGR 14-005-181	Bowhill, S. A.	19	1965
HQ-SG	Kavanagh, L. D., Jr.	UNIV OF IOWA	NGL 16-001-002	Van Allen, J. A.	13	2041
HQ-SG	Schmerling, E. R.	UNIV OF IOWA	NGL 16-001-002	Van Allen, J. A.	13	2041
HQ-SG	Hallenbeck, D. R.	UNIV OF IOWA	NGL 16-001-043	Montgomery, D. C.	13	2042
HQ-SG	Schmerling, E. R.	UNIV OF IOWA	NGL 16-001-043	Montgomery, D. C.	13	2042
HQ-SG	Kelsall, T.	UNIV MARYLAND-BALT	NGR 21-002-010	Misner, C. W.	11	2145
HQ-SG	Roman, N. G.	UNIV MARYLAND-BALT	NGR 21-002-010	Misner, C. W.	11	2145
HQ-SG	Schmerling, E. R.	UNIV MARYLAND-COL PK	NGL 21-002-005	Tidman, D. A.	13	2150

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SG	Kavanagh, L. D.	UNIV MARYLAND-COL PK	NGL 21-002-005	Tidman, D. A.	13	2150
HQ-SG	Dubin, M.	UNIV MARYLAND-COL PK	NGR 21-002-002	Opik, E. J.	11	2157
HQ-SG	Weldon, J. M.	UNIV MARYLAND-COL PK	NGR 21-002-007	Miller, M. H.	11	2159
HQ-SG	Oertel, G. K.	UNIV MARYLAND-COL PK	NGR 21-002-007	Miller, M. H.	11	2159
HQ-SG	Kavanagh, L. D.	UNIV MARYLAND-COL PK	NGR 21-002-066	Earl, J. A.	11	2160
HQ-SG	Opp, A. G.	UNIV MARYLAND-COL PK	NGR 21-002-066	Earl, J. A.	11	2160
HQ-SG	Roman, N. G.	UNIV MARYLAND-COL PK	NGR 21-002-073	Griem, H. R.	11	2161
HQ-SG	Kelsall, T.	UNIV MARYLAND-COL PK	NGR 21-002-073	Griem, H. R.	11	2161
HQ-SG	Oertel, G. K.	UNIV MARYLAND-COL PK	NGR 21-002-199	Kunder, M. R.	11	2164
HQ-SG	Weldon, J. M.	UNIV MARYLAND-COL PK	NGR 21-002-199	Kunder, M. R.	11	2164
HQ-SG	Dubin, M.	UNIV MARYLAND-COL PK	NGR 21-002-219	Poultney, S. K.	31	2168
HQ-SG	Opp, A. G.	UNIV MARYLAND-COL PK	NGR 21-002-224	Gloeckler, G.	11	2169
HQ-SG	Kavanagh, L. D.	UNIV MARYLAND-COL PK	NGR 21-002-224	Gloeckler, G.	11	2169
HQ-SG	Roman, N. G.	UNIV MARYLAND-COL PK	NGR 21-002-301	Currie, D. G.	11	2177
HQ-SG	Bogges, N. W.	UNIV MARYLAND-COL PK	NGR 21-002-301	Currie, D. G.	11	2177
HQ-SG	Kavanagh, L. D., Jr.	UNIV MARYLAND-COL PK	NGR 21-002-308	Matthews, D. L.	13	2179
HQ-SG	Holtz, J. R.	UNIV MARYLAND-COL PK	NGR 21-002-308	Matthews, D. L.	13	2179
HQ-SG	Schmerling, E. R.	UNIV MARYLAND-COL PK	NGR 21-002-311	Wilkerson, T. D.	13	2180
HQ-SG	Kavanagh, L. D., Jr.	UNIV MARYLAND-COL PK	NGR 21-002-311	Wilkerson, T. D.	13	2180
HQ-SG	Weldon, J. M.	UNIV OF MASS-AMHERST	NGL 22-010-025	Strong, J.	11	2398
HQ-SG	Oertel, G. K.	UNIV OF MASS-AMHERST	NGL 22-010-025	Strong, J.	11	2398
HQ-SG	Oertel, G. K.	UNIV OF MASS-AMHERST	NGR 22-010-039	Hueuenin, G. R.	11	2401
HQ-SG	Weldon, J. M.	UNIV OF MASS-AMHERST	NGR 22-010-039	Hueuenin, G. R.	11	2401
HQ-SG	Weldon, J. M.	UNIV MICH-ANN ARBOR	NGL 23-005-275	Mohler, O. C.	11	2451
HQ-SG	Oertel, G. K.	UNIV MICH-ANN ARBOR	NGL 23-005-275	Mohler, O. C.	11	2451
HQ-SG	Hallenbeck, D. R.	UNIV MICH-ANN ARBOR	NGR 23-005-015	Nagy, A. F.	31	2453
HQ-SG	Schmerling, E. R.	UNIV MICH-ANN ARBOR	NGR 23-005-015	Nagy, A. F.	31	2453
HQ-SG	Schmerling, E. R.	UNIV MICH-ANN ARBOR	NGR 23-005-320	Samir, U.	31	2458
HQ-SG	Hallenbeck, D. R.	UNIV MICH-ANN ARBOR	NGR 23-005-320	Samir, U.	31	2458
HQ-SG	Schmerling, E. R.	UNIV MICH-ANN ARBOR	NGR 23-005-360	Hays, P. B.	31	2459
HQ-SG	Dubin, M.	UNIV MICH-ANN ARBOR	NGR 23-005-360	Hays, P. B.	31	2459
HQ-SG	Kelsall, T.	UNIV MICH-ANN ARBOR	NGR 23-005-464	Hiltner, W. A.	11	2463
HQ-SG	Roman, N. G.	UNIV MICH-ANN ARBOR	NGR 23-005-464	Hiltner, W. A.	11	2463
HQ-SG	Dubin, M.	UNIV MICH-ANN ARBOR	NGR 23-005-540	Bartman, F. L.	31	2472
HQ-SG	Weldon, J. M.	UNIV MICH-ANN ARBOR	NGR 23-005-543	Teske, R. G.	11	2473
HQ-SG	Oertel, G. K.	UNIV MICH-ANN ARBOR	NGR 23-005-543	Teske, R. G.	11	2473
HQ-SG	Oertel, G. K.	UNIV MICH-ANN ARBOR	NGR 23-005-549	Haddock, F. T.	11	2475
HQ-SG	Kavanagh, L. D.	U MINN-MNPLS-ST PAUL	NGL 24-005-008	Winckler, J. R.	13	2507
HQ-SG	Roman, N. G.	U MINN-MNPLS-ST PAUL	NGL 24-005-008	Winckler, J. R.	13	2507
HQ-SG	Kavanagh, L. D., Jr.	U MINN-MNPLS-ST PAUL	NGR 24-005-050	Waddington, C. J.	11	2513
HQ-SG	Opp, A. G.	U MINN-MNPLS-ST PAUL	NGR 24-005-050	Waddington, C. J.	11	2513
HQ-SG	Kavanagh, L. D.	U MINN-MNPLS-ST PAUL	NGR 24-005-111	Winckler, J. R.	13	2514
HQ-SG	Ott, E. J.	U MINN-MNPLS-ST PAUL	NGR 24-005-111	Winckler, J. R.	13	2514
HQ-SG	Schmerling, E. R.	U MINN-MNPLS-ST PAUL	NGR 24-005-180	Cahill, L. J.	13	2515
HQ-SG	Kavanagh, L. D., Jr.	U MINN-MNPLS-ST PAUL	NGR 24-005-180	Cahill, L. J.	13	2515
HQ-SG	Dubin, M.	U MINN-MNPLS-ST PAUL	NGR 24-005-196	Nier, A. O.	11	2516
HQ-SG	Holtz, J. R.	U MINN-MNPLS-ST PAUL	NGR 24-005-196	Nier, A. O.	11	2516
HQ-SG	Ott, E.	U MINN-MNPLS-ST PAUL	NGR 24-005-253	Cahill, L. J.	13	2521
HQ-SG	Kavanagh, L. D., Jr.	U MINN-MNPLS-ST PAUL	NGR 24-005-253	Cahill, L. J.	13	2521
HQ-SG	Roman, N. G.	U MINN-MNPLS-ST PAUL	NSR 24-005-245	Luyten, W. J.	11	2527
HQ-SG	Weldon, J. M.	UNIV NEW HAMPSHIRE	NGL 30-002-018	Chupp, E. L.	11	2613
HQ-SG	Oertel, G. K.	UNIV NEW HAMPSHIRE	NGL 30-002-018	Chupp, E. L.	11	2613
HQ-SG	Roman, N. G.	UNIV NEW HAMPSHIRE	NGL 30-002-021	Chupp, E. L.	11	2614
HQ-SG	Opp, A. G.	UNIV NEW HAMPSHIRE	NGL 30-002-021	Chupp, E. L.	11	2614
HQ-SG	Opp, A. G.	UNIV NEW HAMPSHIRE	NGR 30-002-052	Webber, W. R.	11	2615
HQ-SG	Kavanagh, L. D., Jr.	UNIV NEW HAMPSHIRE	NGR 30-002-052	Webber, W. R.	11	2615
HQ-SG	Ott, E. J.	UNIV NEW HAMPSHIRE	NGR 30-002-054	Arnoldy, R. J.	13	2616
HQ-SG	Kavanagh, L. D., Jr.	UNIV NEW HAMPSHIRE	NGR 30-002-054	Arnoldy, R. J.	13	2616

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HQ-SG	Kavanagh, L. D., Jr.	UNIV NEW HAMPSHIRE	NGR 30-002-074	Lockwood, J. A.	13	2617
HQ-SG		UNIV NEW HAMPSHIRE	NGR 30-002-087	Webber, W. R.	11	2618
HQ-SG	Schmerling, E. R.	UNIV NEW HAMPSHIRE	NGR 30-002-088	Lockwood, J. A.	31	2619
HQ-SG	Hallenbeck, D. R.	UNIV NEW HAMPSHIRE	NGR 30-002-088	Lockwood, J. A.	31	2619
HQ-SG	Bogges, N. W.	UNIV OF NEW MEXICO	NGR 32-004-068	Peterson, A. W.	11	2705
HQ-SG	Dubin, M.	UNIV OF NEW MEXICO	NGR 32-004-068	Peterson, A. W.	11	2705
HQ-SG	Dubin, M.	UNIV OF PITTSBURGH	NGR 39-011-113	Donahue, T. M.	31	3110
HQ-SG	Ott, E.	UNIV OF PITTSBURGH	NGR 39-011-113	Donahue, T. M.	31	3110
HQ-SG	Roman, N. G.	UNIV OF PITTSBURGH	NGR 39-011-150	Gerjuoy, E.	11	3115
HQ-SG	Sobieski, S.	UNIV OF PITTSBURGH	NGR 39-011-150	Gerjuoy, E.	11	3115
HQ-SG	Ott, E. J.	UNIV OF ROCHESTER	NGL 33-019-003	Baumeister, P. W.	11	2880
HQ-SG	Roman, N. G.	UNIV OF ROCHESTER	NGL 33-019-003	Baumeister, P. W.	11	2880
HQ-SG	Oertel, G. K.	UNIV OF ROCHESTER	NGR 33-019-126	Clark, A.	11	2882
HQ-SG	Weldon, J. M.	UNIV OF ROCHESTER	NGR 33-019-126	Clark, A.	11	2882
HQ-SG	Kavanagh, L. D., Jr.	UNIV OF SOUTHERN CAL	NGR 05-018-181	Intriligator, D. S.	13	1615
HQ-SG	Schmerling, E. R.	UNIV OF SOUTHERN CAL	NGR 05-018-181	Intriligator, D. S.	13	1615
HQ-SG	Kavanagh, L. D.	UNIV OF SOUTHERN CAL	NGR 05-018-185	Intriligator, D. S.	13	1616
HQ-SG	Calahan, H. D.	UNIV OF SOUTHERN CAL	NGR 05-018-185	Intriligator, D. S.	13	1616
HQ-SG	Weldon, J. M.	UNIV TENNESSEE-KNOXV	NGR 43-001-114	Sellin, I. A.	13	3172
HQ-SG	Oertel, G. K.	UNIV TENNESSEE-KNOXV	NGR 43-001-114	Sellin, I. A.	13	3172
HQ-SG		UNIV TEXAS-AUSTIN	NASR 242	Smith, H. J.	11	3333
HQ-SG	Roman, N. G.	UNIV TEXAS-AUSTIN	NGR 44-012-209	Vanden Bout, P. A.	11	3343
HQ-SG	Sobieski, S.	UNIV TEXAS-AUSTIN	NGR 44-012-209	Vanden Bout, P. A.	11	3343
HQ-SG	Weldon, J. M.	UNIV TEXAS-AUSTIN	NGR 44-012-215	Lambert, D. L.	11	3344
HQ-SG	Oertel, G. K.	UNIV TEXAS-AUSTIN	NGR 44-012-215	Lambert, D. L.	11	3344
HQ-SG	Roman, N. G.	UNIV TEXAS-AUSTIN	NSR 44-012-206	Evans, D. S.	11	3353
HQ-SG	Bogges, N. W.	UNIV TEXAS-AUSTIN	NSR 44-012-206	Evans, D. S.	11	3353
HQ-SG	Schmerling, E. R.	UNIV TEXAS-DALLAS	NGR 44-004-030	Heikkila, W. J.	31	3376
HQ-SG	Hallenbeck, D. R.	UNIV TEXAS-DALLAS	NGR 44-004-030	Heikkila, W. J.	31	3376
HQ-SG	Ott, E. J.	UNIV TEXAS-DALLAS	NGR 44-004-120	Hanson, W. B.	31	3379
HQ-SG	Schmerling, E. R.	UNIV TEXAS-DALLAS	NGR 44-004-120	Hanson, W. B.	31	3379
HQ-SG	Opp, A. G.	UNIV TEXAS-DALLAS	NGR 44-004-121	McCracken, K. G.	11	3380
HQ-SG	Schmerling, E. R.	UNIV TEXAS-DALLAS	NGR 44-004-124	Heikkila, W. J.	31	3381
HQ-SG	Ott, E. J.	UNIV TEXAS-DALLAS	NGR 44-004-124	Heikkila, W. J.	31	3381
HQ-SG	Kavanagh, L. D., Jr.	UNIV TEXAS-DALLAS	NGR 44-004-133	Allum, F. R.	11	3382
HQ-SG	Opp, A. G.	UNIV TEXAS-DALLAS	NGR 44-004-133	Allum, F. R.	11	3382
HQ-SG	Schmerling, E. R.	UNIV TEXAS-DALLAS	NGR 44-004-150	Heikkila, W. J.	31	3383
HQ-SG	Kavanagh, L. D., Jr.	UNIV TEXAS-DALLAS	NGR 44-004-150	Heikkila, W. J.	31	3383
HQ-SG		UNIV TEXAS-DALLAS	NSG 583	Reaney, R. C.	13	3384
HQ-SG	Dubin, M.	UNIV OF TOLEDO	NGR 36-010-022	Witt, A. D.	11	2996
HQ-SG	Calahan, D.	UNIV OF TOLEDO	NGR 36-010-022	Witt, A. D.	11	2996
HQ-SG	Roman, N. G.	UNIV OF VIRGINIA	NGL 47-005-066	Fredrick, L. W.	11	3472
HQ-SG	Roman, N. G.	UNIV OF VIRGINIA	NGR 47-005-153	Frederick, L. W.	11	3479
HQ-SG	Ott, E. J.	UNIV OF VIRGINIA	NGR 47-005-153	Frederick, L. W.	11	3479
HQ-SG	Holtz, J.	UNIV OF WASHINGTON	NGR 48-002-033	Hodge, P. W.	11	3536
HQ-SG	Dubin, M.	UNIV OF WASHINGTON	NGR 48-002-033	Hodge, P. W.	11	3536
HQ-SG	Bogges, N. W.	UNIV WISC-MADISON	NGL 50-002-013	Code, A. D.	11	3578
HQ-SG	Roman, N. G.	UNIV WISC-MADISON	NGL 50-002-013	Code, A. D.	11	3578
HQ-SG	Ott, E. J.	UNIV WISC-MADISON	NGL 50-002-044	Kraushaar, W. L.	11	3579
HQ-SG	Roman, N. G.	UNIV WISC-MADISON	NGL 50-002-044	Kraushaar, W. L.	11	3579
HQ-SG	Kavanagh, L. D., Jr.	UNIV WISC-MADISON	NGR 50-002-162	Scherb, F.	13	3589
HQ-SG	Ott, E. J.	UNIV WISC-MADISON	NGR 50-002-162	Scherb, F.	13	3589
HQ-SG	Schmerling, E. R.	UNIV OF WYOMING	NGR 51-001-033	Hofman, D.	13	3607
HQ-SG	Hallenbeck, D. R.	UNIV OF WYOMING	NGR 51-001-033	Hofman, D.	13	3607
HQ-SG	Opp, A. G.	UNIV OF WYOMING	NGR 51-001-035	Tompkins, D. R., Jr.	11	3608
HQ-SG	Kavanagh, L. D.	UNIV OF WYOMING	NGR 51-001-035	Tompkins, D. R., Jr.	11	3608
HQ-SG		UPPSALA UNIVERSITY	NASR 174	Bockasten, K.	12	3627
HQ-SG	Kavanagh, L. D., Jr.	WASHINGTON UNIVERSTY	NGL 26-008-057	Abraham Shraune, B.	13	2579

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SG	Schmerling, E. R.	WASHINGTON UNIVERSTY	NGL 26-008-057	Abraham Shraune, B.	13	2579
HQ-SG	Kavanagh, L. D., Jr.	WASHINGTON UNIVERSTY	NGR 26-008-001	Klarmann, J.	11	2581
HQ-SG	Opp, A. G.	WASHINGTON UNIVERSTY	NGR 26-008-001	Klarmann, J.	11	2581
HQ-SG	Bogges, N. W.	WASHINGTON UNIVERSTY	NGR 26-008-069	Friedlander, M. W.	11	2582
HQ-SG	Roman, N. G.	WASHINGTON UNIVERSTY	NGR 26-008-069	Friedlander, M. W.	11	2582
HQ-SG	Roman, N. G.	WESLEYAN UNIVERSITY	NGR 07-006-004	Page, T.	11	1702
HQ-SG	Ashworth, C. D.	WESLEYAN UNIVERSITY	NGR 07-006-004	Page, T.	11	1702
HQ-SG	Schmerling, E. R.	YALE UNIVERSITY	NGR 07-004-109	Walker, J. C.	31	1716
HQ-SG	Kavanagh, L. D.	YALE UNIVERSITY	NGR 07-004-109	Walker, J. C.	31	1716
HQ-SL	Young, R. S.	BOSTON UNIVERSITY	NGR 22-004-025	Margulis, L.	32	2211
HQ-SL	Brunk, W. E.	BRIGHAM YOUNG UNIV	NGR 45-001-032	Jones, D. E.	11	3411
HQ-SL	Fellows, R. F.	BRIGHAM YOUNG UNIV	NGR 45-001-032	Jones, D. E.	11	3411
HQ-SL	Allingham, J. W.	BROWN UNIVERSITY	NGR 40-002-088	Mutch, T. A.	32	3126
HQ-SL	Dwornik, S. E.	BROWN UNIVERSITY	NGR 40-002-088	Mutch, T. A.	32	3126
HQ-SL	Allingham, J. W.	BROWN UNIVERSITY	NGR 40-002-112	Mutch, T. A.	32	3128
HQ-SL	Morris, E. C.	BROWN UNIVERSITY	NGR 40-002-112	Mutch, T. A.	32	3128
HQ-SL	Fellows, R. F.	CALIF INST OF TECH	NGL 05-002-003	Muhleman, D. O.	11	1195
HQ-SL	Brunk, W. E.	CALIF INST OF TECH	NGL 05-002-003	Muhleman, D. O.	11	1195
HQ-SL	Brunk, W. E.	CALIF INST OF TECH	NGL 05-002-140	Munch, G.	11	1204
HQ-SL	Fellows, R. F.	CALIF INST OF TECH	NGL 05-002-140	Munch, G.	11	1204
HQ-SL	Fellows, R. F.	CALIF INST OF TECH	NGR 05-002-114	Muhleman, D. O.	11	1211
HQ-SL	Brunk, W. E.	CALIF INST OF TECH	NGR 05-002-114	Muhleman, D. O.	11	1211
HQ-SL	Dwornik, S. E.	CALIF INST OF TECH	NGR 05-002-117	Murray, B. C.	31	1212
HQ-SL	Allingham, J. W.	CALIF INST OF TECH	NGR 05-002-117	Murray, B. C.	31	1212
HQ-SL	Young, R. S.	CALIF INST OF TECH	NGR 05-002-121	Horowitz, N. H.	51	1213
HQ-SL	Dwornik, S. E.	CALIF INST OF TECH	NGR 05-002-156	Murray, B. C.	32	1215
HQ-SL	Allingham, J. W.	CALIF INST OF TECH	NGR 05-002-156	Murray, B. C.	32	1215
HQ-SL	Allingham, J. W.	CALIF INST OF TECH	NGR 05-002-181	Leighton, R. B.	32	1219
HQ-SL	Dwornik, S. E.	CALIF INST OF TECH	NGR 05-002-181	Leighton, R. B.	32	1219
HQ-SL	Brunk, W. E.	CALIF INST OF TECH	NGR 05-002-185	Westphal, J. A.	11	1220
HQ-SL	Fellows, R. F.	CALIF INST OF TECH	NGR 05-002-185	Westphal, J. A.	11	1220
HQ-SL	Keller, J. W.	CALIF INST OF TECH	NGR 05-002-225	Vogt, R. E.	13	1223
HQ-SL	Mitz, M. A.	CALIF INST OF TECH	NGR 05-002-225	Vogt, R. E.	13	1223
HQ-SL	Mitz, M. A.	CALIF INST OF TECH	NGR 05-002-230	Murray, B. C.	32	1224
HQ-SL	Keller, J. W.	CALIF INST OF TECH	NGR 05-002-230	Murray, B. C.	32	1224
HQ-SL	Morris, E. C.	CALIF INST OF TECH	NGR 05-002-249	Anderson, D. L.	32	1226
HQ-SL	Dwornik, S. E.	CALIF INST OF TECH	NGR 05-002-249	Anderson, D. L.	32	1226
HQ-SL	Dwornik, S. E.	CALIF INST OF TECH	NGR 05-002-302	Shoemaker, E. M.	32	1232
HQ-SL	Allingham, J. W.	CALIF INST OF TECH	NGR 05-002-302	Shoemaker, E. M.	32	1232
HQ-SL	Allingham, J. W.	CALIF INST OF TECH	NGR 05-002-316	Anderson, D. L.	32	1236
HQ-SL	Dwornik, S. E.	CALIF INST OF TECH	NGR 05-002-316	Anderson, D. L.	32	1236
HQ-SL	Young, R.	CAL STATE U-FULLERTN	NGR 05-071-002	Johnson, F. M.	11	1241
HQ-SL	Young, R. S.	CAL STATE U-FULLERTN	NGR 05-071-008	Wegner, P. A.	12	1243
HQ-SL	Tarver, P.	CORNELL UNIVERSITY	NASW 2366	Wehe, R. L.	42	2753
HQ-SL	Herman, D. H.	CORNELL UNIVERSITY	NASW 2366	Wehe, R. L.	42	2753
HQ-SL		CORNELL UNIVERSITY	NASW 2445		32	2754
HQ-SL	Fellows, R. F.	CORNELL UNIVERSITY	NGL 33-010-082	Sagan, C.	31	2761
HQ-SL		CORNELL UNIVERSITY	NGL 33-010-186		31	2763
HQ-SL	Young, R. S.	CORNELL UNIVERSITY	NGR 33-010-101	Sagan, C.	12	2767
HQ-SL	Geib, D. S.	CORNELL UNIVERSITY	NGR 33-010-127	Duxbury, J. M.	51	2769
HQ-SL	Tarver, P.	CORNELL UNIVERSITY	NSR 33-010-055	Wehe, R. L.	42	2781
HQ-SL	Mitz, M. A.	DREXEL UNIVERSITY	NGR 39-004-042	Soberman, R. K.	13	3048
HQ-SL	Keller, J. W.	DREXEL UNIVERSITY	NGR 39-004-042	Soberman, R. K.	13	3048
HQ-SL	Young, R. S.	FLORIDA STATE UNIV	NGR 10-004-018	Gaffron, H.	51	1780
HQ-SL	Young, R. S.	FLORIDA STATE UNIV	NGR 10-004-041	Larock, P. A.	51	1781
HQ-SL	Brunk, W. E.	FLORIDA STATE UNIV	NGR 10-004-056	Hunt, R. H.	11	1782
HQ-SL	Fellows, R. F.	FLORIDA STATE UNIV	NGR 10-004-056	Hunt, R. H.	11	1782
HQ-SL	Hipsher, H. F.	GEORGIA INST OF TECH	NGL 11-002-004	Edwards, H. D.	31	1840

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HQ-SL	Fellows, R. F.	GEORGIA INST OF TECH	NGL 11-002-004	Edwards, H. D.	31	1840
HQ-SL	Dwornik, S. E.	HAMILTON COLLEGE	NGR 33-192-001	Poller, D. B.	32	2795
HQ-SL	Allingham, J. W.	HAMILTON COLLEGE	NGR 33-192-001	Poller, D. B.	32	2795
HQ-SL	Gallagher, S. G.	HARDIN-SIMMONS UNIV	NGR 44-095-001	Foster, T. L.	51	3203
HQ-SL	Hall, L. B.	HARDIN-SIMMONS UNIV	NGR 44-095-001	Foster, T. L.	51	3203
HQ-SL	Geib, D. S.	HARVARD UNIVERSITY	NGL 22-007-069	Borghoorn, E. S.	32	2225
HQ-SL	Fellows, R. F.	HARVARD UNIVERSITY	NGL 22-007-228	Goody, R. M.	31	2229
HQ-SL	Hipsher, H. F.	HARVARD UNIVERSITY	NGL 22-007-228	Goody, R. M.	31	2229
HQ-SL	Fellows, R. F.	HARVARD UNIVERSITY	NGR 22-007-240	Goody, R. M.	31	2241
HQ-SL	Fellows, R. F.	HARVARD UNIVERSITY	NGR 22-007-242	Goody, R. M.	31	2242
HQ-SL	Geib, D. S.	INDIANA U-BLOOMINGTN	NGR 15-003-118	Hayes, J. M.	12	1983
HQ-SL	Young, R. S.	JOHNS HOPKINS UNIV	NGR 21-001-037	Eugster, H. P.	12	2134
HQ-SL	Mitz, M. A.	JOHNS HOPKINS UNIV	NGR 21-001-097	Krimigis, S. M.	13	2137
HQ-SL	Keller, J. W.	JOHNS HOPKINS UNIV	NGR 21-001-097	Krimigis, S. M.	13	2137
HQ-SL	Hipsher, H. F.	KANSAS STATE UNIV	NGL 17-001-026	Williams, G.	31	2047
HQ-SL	Fellows, R. F.	KANSAS STATE UNIV	NGL 17-001-026	Williams, G.	31	2047
HQ-SL	Brunk, W. E.	MASS INST OF TECH	NGL 22-009-016	Barrett, A. H.	32	2314
HQ-SL	Fellows, R. F.	MASS INST OF TECH	NGL 22-009-521	Lewis, J. S.	31	2327
HQ-SL	Geisch, D. S.	MASS INST OF TECH	NGR 22-009-005	Biemann, K.	12	2332
HQ-SL	Young, R. S.	MASS INST OF TECH	NGR 22-009-005	Biemann, K.	12	2332
HQ-SL	Young, R. S.	MASS INST OF TECH	NGR 22-009-277	Rich, A.	12	2336
HQ-SL	Brunk, W. E.	MASS INST OF TECH	NGR 22-009-473	McCord, T. B.	11	2344
HQ-SL	Fellows, R. F.	MASS INST OF TECH	NGR 22-009-473	McCord, T. B.	11	2344
HQ-SL	Hipsher, H. F.	MASS INST OF TECH	NGR 22-009-619	Crowston, W. B.	31	2355
HQ-SL	Harnett, D. J.	MASS INST OF TECH	NGR 22-009-619	Crowston, W. B.	31	2355
HQ-SL	Dwornik, S. E.	MASS INST OF TECH	NGR 22-009-625	Thomas, T. B.	32	2356
HQ-SL	Allingham, J. W.	MASS INST OF TECH	NGR 22-009-625	Thomas, T. B.	32	2356
HQ-SL	Keller, J. W.	MASS INST OF TECH	NGR 22-009-626	Shapiro, I. I.	13	2357
HQ-SL	Mitz, M. A.	MASS INST OF TECH	NGR 22-009-626	Shapiro, I. I.	13	2357
HQ-SL	Dwornik, S. E.	MASS INST OF TECH	NGR 22-009-637	McGetchin, T. R.	32	2359
HQ-SL	Allingham, J. W.	MASS INST OF TECH	NGR 22-009-637	McGetchin, T. R.	32	2359
HQ-SL	Fellows, R. F.	MASS INST OF TECH	NGR 22-009-672	Pettengill, G. H.	11	2362
HQ-SL	Brunk, W. E.	MASS INST OF TECH	NGR 22-009-672	Pettengill, G. H.	11	2362
HQ-SL	Fellows, R. F.	MASS INST OF TECH	NGR 22-009-693	Pettengill, G. H.	31	2363
HQ-SL	Fellows, R. F.	MASS INST OF TECH	NGR 22-009-694	Shapiro, I. I.	31	2364
HQ-SL	Young, R. S.	MICHIGAN STATE UNIV	NGR 23-004-069	Erickson, A. E.	51	2418
HQ-SL	Brunk, W. E.	NEW MEX ST U-LAS CR	NGL 32-003-001	Smith, B. A.	11	2690
HQ-SL	Fellows, R. F.	NEW MEX ST U-LAS CR	NGL 32-003-001	Smith, B. A.	11	2690
HQ-SL	Gallagher, S. B.	NO DAKOTA STATE UNIV	NGR 35-001-012	Hill, T. W.	12	2925
HQ-SL	Hall, L. B.	NO DAKOTA STATE UNIV	NGR 35-001-012	Hill, T. W.	12	2925
HQ-SL	Dwornik, S. E.	NWN ST U-LOUISIANA	NGR 19-013-002	Dehon, R. A.	32	2106
HQ-SL	Allingham, J. W.	NWN ST U-LOUISIANA	NGR 19-013-002	Dehon, R. A.	32	2106
HQ-SL	Geib, D. S.	OREGON STATE UNIV	NGR 38-002-013	Curl, C. H.	51	3017
HQ-SL	Young, R. S.	PENNSYLVANIA STATE U	NGR 39-009-180	Casida, L. E., Jr.	51	3084
HQ-SL	Fellows, R. F.	POLY INST BROOKLYN	NGR 33-006-068	Gross, S. H.	31	2826
HQ-SL	Hipsher, H. F.	POLY INST BROOKLYN	NGR 33-006-068	Gross, S. H.	31	2826
HQ-SL	Young, R. S.	POLY INST BROOKLYN	NGR 33-006-070	Eirich, F. R.	12	2827
HQ-SL	Brunk, W. E.	PRINCETON UNIVERSITY	NGR 31-001-242	Smith, W. H.	11	2663
HQ-SL	Fellows, R. F.	PRINCETON UNIVERSITY	NGR 31-001-242	Smith, W. H.	11	2663
HQ-SL	Hipsher, H. F.	RENSSELAER POLY-NY	NGL 33-018-007	Harteck, P.	31	2833
HQ-SL	Fellows, R. F.	RENSSELAER POLY-NY	NGL 33-018-007	Harteck, P.	31	2833
HQ-SL	Tarver, P.	RENSSELAER POLY-NY	NGL 33-018-091	Yerazunis, S. W.	49	2835
HQ-SL	Herman, D. H.	RENSSELAER POLY-NY	NGL 33-018-091	Yerazunis, S. W.	49	2835
HQ-SL	Young, R. S.	RENSSELAER POLY-NY	NGR 33-018-148	Ferris, J. P.	12	2836
HQ-SL	Young, R. S.	ST JOSEPH COL-CONN	NGR 07-011-001	Murphy, M. E.	12	1692
HQ-SL	Young, R. S.	SO ILL UNIV-CARBONDL	NGR 14-008-026	Yopp, J. H.	51	1907
HQ-SL	Fellows, R. F.	STANFORD UNIVERSITY	NGL 05-020-014	Von Eshleman, V. R.	31	1300
HQ-SL	Fellows, R. F.	STANFORD UNIVERSITY	NGL 05-020-103	Gierasch, P. J.	13	1303

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HQ-SL	Hipsher, H. F.	STANFORD UNIVERSITY	NGL 05-020-103	Gierasch, P. J.	13	1303
HQ-SL	Young, R. S.	STANFORD UNIVERSITY	NGL 05-020-582	Bonner, W. A.	59	1320
HQ-SL	Young, R. S.	STANFORD UNIVERSITY	NGR 05-020-004	Lederberg, J.	51	1322
HQ-SL		STANFORD UNIVERSITY	NGR 05-020-267	Howard, A. D.	32	1325
HQ-SL	Mitz, M. A.	STANFORD UNIVERSITY	NGR 05-020-529	Tyler, G. L.	31	1340
HQ-SL	Keller, J. W.	STANFORD UNIVERSITY	NGR 05-020-529	Tyler, G. L.	31	1340
HQ-SL	Keller, J. W.	STANFORD UNIVERSITY	NGR 05-020-530	Von Eshleman, V. R.	12	1341
HQ-SL	Mitz, M. A.	STANFORD UNIVERSITY	NGR 05-020-530	Von Eshleman, V. R.	12	1341
HQ-SL	Brunk, W. E.	STANFORD UNIVERSITY	NGR 05-020-644	Bracewell, R. N.	11	1358
HQ-SL	Fellows, R. F.	STANFORD UNIVERSITY	NGR 05-020-644	Bracewell, R. N.	11	1358
HQ-SL	Allingham, J. W.	STANFORD UNIVERSITY	NGR 05-020-649	Howard, H. T.	32	1359
HQ-SL	Dwornik, S. E.	STANFORD UNIVERSITY	NGR 05-020-649	Howard, H. T.	32	1359
HQ-SL	Young, R. S.	STATE UNIV NY-BUFFAL	NGR 33-015-002	Danielli, J. F.	12	2844
HQ-SL	Dwornik, S. E.	STATE UNIV NY-BUFFAL	NGR 33-015-108	King, J. S.	32	2846
HQ-SL	Allingham, J. W.	STATE UNIV NY-BUFFAL	NGR 33-015-108	King, J. S.	32	2846
HQ-SL	Fellows, R. F.	STATE U NY-STONY BRK	NGR 33-015-139	Varanasi, P.	31	2859
HQ-SL	Brunk, W. E.	STATE U NY-STONY BRK	NGR 33-015-141	Owen, T.	11	2861
HQ-SL	Fellows, R. F.	STATE U NY-STONY BRK	NGR 33-015-141	Owen, T.	11	2861
HQ-SL	Keller, J. W.	STATE U NY-STONY BRK	NGR 33-015-149	Owen, T.	11	2862
HQ-SL	Mitz, M. A.	STATE U NY-STONY BRK	NGR 33-015-149	Owen, T.	11	2862
HQ-SL		STATE U NY-STONY BRK	NGR 33-015-169		31	2867
HQ-SL	Fellows, R. F.	TEXAS A&M UNIVERSITY	NGR 44-001-117	Plass, G. M.	31	3267
HQ-SL	Hipsher, H. F.	TEXAS A&M UNIVERSITY	NGR 44-001-117	Plass, G. M.	31	3267
HQ-SL	Morris, E. C.	TULANE UNIVERSITY	NGR 19-002-032	Parsley, R. L.	32	2116
HQ-SL	Dwornik, S. E.	TULANE UNIVERSITY	NGR 19-002-032	Parsley, R. L.	32	2116
HQ-SL	Dwornik, S. E.	TULANE UNIVERSITY	NGR 19-002-038	Meyer, J. D.	32	2117
HQ-SL	Allingham, J. W.	TULANE UNIVERSITY	NGR 19-002-038	Meyer, J. D.	32	2117
HQ-SL	Young, R. S.	UNIV ALA-BIRMINGHAM	NGR 01-010-001	Lacey, J. C., Jr.	12	1035
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NASR 138	Gehrels, A. M.	31	1136
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGL 03-002-002	Kuiper, G. P.	11	1138
HQ-SL	Fellows, R. F.	UNIV OF ARIZONA	NGL 03-002-002	Kuiper, G. P.	11	1138
HQ-SL	Hipsher, H. F.	UNIV OF ARIZONA	NGL 03-002-019	Hoenig, S. A.	31	1141
HQ-SL	Fellows, R. F.	UNIV OF ARIZONA	NGL 03-002-019	Hoenig, S. A.	31	1141
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGL 03-002-081	Gehrels, A. M.	11	1142
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGL 03-002-122	Roemer, E.	11	1143
HQ-SL	Young, R. S.	UNIV OF ARIZONA	NGR 03-002-171	Nagy, B.	32	1150
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGR 03-002-219	Gehrels, A. M.	11	1155
HQ-SL	Fellows, R. F.	UNIV OF ARIZONA	NGR 03-002-219	Gehrels, A. M.	11	1155
HQ-SL	Fellows, R. F.	UNIV OF ARIZONA	NGR 03-002-236	Johnson, H. L.	11	1156
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGR 03-002-236	Johnson, H. L.	11	1156
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGR 03-002-270	Kuiper, G. P.	11	1160
HQ-SL	Fellows, R. F.	UNIV OF ARIZONA	NGR 03-002-270	Kuiper, G. P.	11	1160
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGR 03-002-274	Johnson, H. L.	11	1161
HQ-SL	Mitz, M. A.	UNIV OF ARIZONA	NGR 03-002-275	Gehrels, A. M.	11	1162
HQ-SL	Keller, J. W.	UNIV OF ARIZONA	NGR 03-002-275	Gehrels, A. M.	11	1162
HQ-SL	Fellows, R. F.	UNIV OF ARIZONA	NGR 03-002-356	Low, F. J.	11	1170
HQ-SL	Brunk, W. E.	UNIV OF ARIZONA	NGR 03-002-356	Low, F. J.	11	1170
HQ-SL	Young, R. S.	UNIV CALIF-BERKELEY	NGL 05-003-003	Calvin, M.	32	1393
HQ-SL	Young, R. S.	UNIV CALIF-BERKELEY	NGL 05-003-079	McLaron, A. D.	51	1398
HQ-SL	Fellows, R. F.	UNIV CALIF-BERKELEY	NGL 05-003-286	Pimental, G. C.	31	1402
HQ-SL	Hipsher, H. F.	UNIV CALIF-BERKELEY	NGL 05-003-286	Pimental, G. C.	31	1402
HQ-SL	Young, R. S.	UNIV CALIF-BERKELEY	NGR 05-003-020	Jukes, T.	51	1407
HQ-SL	Dwornik, S. E.	UNIV CALIF-BERKELEY	NGR 05-003-302	Calvin, M.	32	1410
HQ-SL	Allingham, J. W.	UNIV CALIF-BERKELEY	NGR 05-003-302	Calvin, M.	32	1410
HQ-SL	Morris, E. C.	UNIV CALIF-BERKELEY	NGR 05-003-431	Anderson, K. A.	32	1416
HQ-SL	Dwornik, S. E.	UNIV CALIF-BERKELEY	NGR 05-003-431	Anderson, K. A.	32	1416
HQ-SL	Brunk, W. E.	UNIV CALIF-BERKELEY	NGR 05-003-452	Townes, C. H.	11	1423
HQ-SL	Fellows, R. F.	UNIV CALIF-BERKELEY	NGR 05-003-452	Townes, C. H.	11	1423

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SL	Keller, J. W.	UNIV CALIF-BERKELEY	NGR 05-003-458	Anderson, K. A.	13	1425
HQ-SL	Mitz, M. A.	UNIV CALIF-BERKELEY	NGR 05-003-458	Anderson, K. A.	13	1425
HQ-SL	Brunk, W. E.	UNIV CALIF-BERKELEY	NGR 05-003-459	Field, G. B.	11	1426
HQ-SL	Young, R. S.	UNIV CALIF-BERKELEY	NGR 05-003-460	Jukes, T. H.	12	1427
HQ-SL	Young, R. S.	UNIV CALIF-L ANGELES	NGR 05-007-215	Libby, W. F.	32	1497
HQ-SL	Young, R. S.	UNIV CALIF-L ANGELES	NGR 05-007-221	Kaplan, I. R.	32	1498
HQ-SL	Dwornik, S. E.	UNIV CALIF-L ANGELES	NGR 05-007-317	Lingenfelter, R. E.	32	1505
HQ-SL	Allingham, J. W.	UNIV CALIF-L ANGELES	NGR 05-007-317	Lingenfelter, R. E.	32	1505
HQ-SL	Keller, J. W.	UNIV CALIF-L ANGELES	NGR 05-007-326	Wetherill, G. W.	32	1507
HQ-SL	Mitz, M. A.	UNIV CALIF-L ANGELES	NGR 05-007-326	Wetherill, G. W.	32	1507
HQ-SL	Mitz, M. A.	UNIV CALIF-L ANGELES	NGR 05-007-327	Coleman, P. J., Jr.	13	1508
HQ-SL	Keller, J. W.	UNIV CALIF-L ANGELES	NGR 05-007-327	Coleman, P. J., Jr.	13	1508
HQ-SL	Fellows, R. F.	UNIV CALIF-L ANGELES	NGR 05-007-359	Russell, C. T.	31	1515
HQ-SL	Dwornik, S. E.	UNIV CALIF-SAN DIEGO	NGR 05-009-110	Alfven, H.	11	1555
HQ-SL	Fellows, R. F.	UNIV CALIF-SAN DIEGO	NGR 05-009-142	Gillett, F. C.	11	1556
HQ-SL	Brunk, W. E.	UNIV CALIF-SAN DIEGO	NGR 05-009-142	Gillett, F. C.	11	1556
HQ-SL	Mitz, M. A.	UNIV CALIF-SAN DIEGO	NGR 05-009-177	Axford, W. I.	13	1559
HQ-SL	Keller, J. W.	UNIV CALIF-SAN DIEGO	NGR 05-009-177	Axford, W. I.	13	1559
HQ-SL	Young, R. S.	UNIV CALIF-SAN DIEGO	NGR 05-009-218	Miller, S. L.	12	1567
HQ-SL	Young, R. S.	UNIV CALIF-SAN FRAN	NGL 05-025-014	Stolckenuecs, W.	59	1571
HQ-SL	Young, R. S.	UNIV CALIF-S BARBARA	NGR 05-010-035	Cloud, P. E.	32	1577
HQ-SL	Dwornik, S. E.	UNIV CALIF-S BARBARA	NGR 05-010-062	Peale, S. J.	32	1578
HQ-SL	Allingham, J. W.	UNIV CALIF-S BARBARA	NGR 05-010-062	Peale, S. J.	32	1578
HQ-SL	Allingham, J. W.	UNIV OF CHICAGO	NGR 14-001-135	Turkevich, A. L.	32	1929
HQ-SL	Dwornik, S. E.	UNIV OF CHICAGO	NGR 14-001-135	Turkevich, A. L.	32	1929
HQ-SL	Fellows, R. F.	UNIV OF CHICAGO	NGR 14-001-148	Knollenberg, R. G.	31	1931
HQ-SL	Hipsher, H. F.	UNIV OF CHICAGO	NGR 14-001-148	Knollenberg, R. G.	31	1931
HQ-SL	Hipsher, H. F.	UNIV OF CHICAGO	NGR 14-001-194	Kaplan, L. D.	31	1938
HQ-SL	Fellows, R. F.	UNIV OF CHICAGO	NGR 14-001-194	Kaplan, L. D.	31	1938
HQ-SL	Mitz, M. A.	UNIV OF CHICAGO	NGR 14-001-196	Simpson, J. A.	13	1939
HQ-SL	Keller, J. W.	UNIV OF CHICAGO	NGR 14-001-196	Simpson, J. A.	13	1939
HQ-SL	Young, R. S.	UNIV OF CHICAGO	NGR 14-001-203	Anders, E.	32	1941
HQ-SL	Fellows, R. F.	UNIV COLORADO-BOLDR	NGL 06-003-052	Barth, C. A.	31	1656
HQ-SL	Hipsher, H. F.	UNIV COLORADO-BOLDR	NGL 06-003-052	Barth, C. A.	31	1656
HQ-SL	Hipsher, H. F.	UNIV COLORADO-BOLDR	NGR 06-003-127	Barth, C. A.	31	1662
HQ-SL	Fellows, R. F.	UNIV COLORADO-BOLDR	NGR 06-003-127	Barth, C. A.	31	1662
HQ-SL	Dwornik, S. E.	UNIV COLORADO-BOLDR	NGR 06-003-177	Peterson, J. E.	32	1665
HQ-SL	Morris, E. C.	UNIV COLORADO-BOLDR	NGR 06-003-177	Peterson, J. E.	32	1665
HQ-SL	Keller, J. W.	UNIV COLORADO-BOLDR	NGR 06-003-184	Lillie, C. F.	31	1668
HQ-SL	Mitz, M. A.	UNIV COLORADO-BOLDR	NGR 06-003-184	Lillie, C. F.	31	1668
HQ-SL	Dwornik, S. E.	UNIV COLORADO-BOLDR	NGR 06-003-199	Peterson, J. E.	32	1670
HQ-SL	Allingham, J. W.	UNIV COLORADO-BOLDR	NGR 06-003-199	Peterson, J. E.	32	1670
HQ-SL	Hipsher, H. F.	UNIV COLORADO-BOLDR	NGR 06-003-201	Thomas, G. E.	31	1671
HQ-SL	Fellows, R. F.	UNIV COLORADO-BOLDR	NGR 06-003-201	Thomas, G. E.	31	1671
HQ-SL	Brunk, W. E.	UNIV OF DENVER	NGR 06-004-114	Murcray, D. G.	11	1685
HQ-SL	Fellows, R. F.	UNIV OF DENVER	NGR 06-004-114	Murcray, D. G.	11	1685
HQ-SL	Young, R. S.	UNIV OF DETROIT	NGR 23-002-001	Szutka, A.	12	2423
HQ-SL	Fellows, R. F.	UNIV OF FLORIDA	NGL 10-005-008	Green, A. S.	31	1796
HQ-SL	Brunk, W. E.	UNIV OF FLORIDA	NGL 10-005-008	Green, A. S.	31	1796
HQ-SL	Morris, E. C.	UNIV OF GEORGIA	NGR 11-003-033	Herz, N.	32	1862
HQ-SL	Dwornik, S. E.	UNIV OF GEORGIA	NGR 11-003-033	Herz, N.	32	1862
HQ-SL	Dwornik, S. E.	UNIV OF GEORGIA	NGR 11-003-037	Howard, J. H., III	32	1863
HQ-SL	Allingham, J. W.	UNIV OF GEORGIA	NGR 11-003-037	Howard, J. H., III	32	1863
HQ-SL	Young, R. S.	UNIV OF HAWAII	NGL 12-001-042	Siegel, S. M.	51	1871
HQ-SL	Brunk, W. E.	UNIV OF HAWAII	NGL 12-001-057	Jefferies, J. T.	11	1873
HQ-SL	Brunk, W. E.	UNIV OF HAWAII	NGR 12-001-083	Sinton, W. M.	11	1875
HQ-SL	Fellows, R. F.	UNIV OF HAWAII	NGR 12-001-083	Sinton, W. M.	11	1875
HQ-SL	Fellows, R. F.	UNIV OF HAWAII	NGR 12-001-097	Sinton, W. M.	11	1876

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SL	Brunk, W. E.	UNIV OF HAWAII	NGR 12-001-097	Sinton, W. M.	11	1876
HQ-SL	Geib, D. S.	UNIV OF HAWAII	NGR 12-001-109	Folsome, C. E.	59	1877
HQ-SL	Young, R. S.	UNIV OF HAWAII	NGR 12-001-109	Folsome, C. E.	59	1877
HQ-SL	Fellows, R. F.	UNIV OF HAWAII	NSR 12-001-019	Jefferies, J. T.	11	1880
HQ-SL	Brunk, W. E.	UNIV OF HAWAII	NSR 12-001-019	Jefferies, J. T.	11	1880
HQ-SL	Young, R. S.	UNIV OF HOUSTON	NGR 44-005-002	Oro, J.	32	3309
HQ-SL	Young, R. S.	UNIV OF HOUSTON	NGR 44-005-091	Becker, R. S.	12	3310
HQ-SL	Dwornik, S. E.	UNIV OF HOUSTON	NGR 44-005-131	King, E. A., Jr.	32	3314
HQ-SL	Allingham, J. W.	UNIV OF HOUSTON	NGR 44-005-131	King, E. A., Jr.	32	3314
HQ-SL	Young, R. S.	UNIV ILLINOIS-CHICGO	NGR 14-012-004	Boyer, J. H.	12	1948
HQ-SL	Brunk, W. E.	UNIV ILLINOIS-URBANA	NGR 14-005-176	Dichel, J. R.	11	1963
HQ-SL	Brunk, W. E.	UNIV OF IOWA	NGR 16-001-094	Neff, J. A.	11	2044
HQ-SL	Fellows, R. F.	UNIV OF IOWA	NGR 16-001-094	Neff, J. A.	11	2044
HQ-SL	Fellows, R. F.	UNIV OF IOWA	NGR 16-001-102	Neff, J. F.	11	2045
HQ-SL	Brunk, W. E.	UNIV OF IOWA	NGR 16-001-102	Neff, J. F.	11	2045
HQ-SL		UNIV OF KANSAS	NGR 17-002-042	Himes, R. H.	51	2059
HQ-SL	Geib, D. S.	UNIV OF KANSAS	NGR 17-002-042	Himes, R. H.	51	2059
HQ-SL	Brunk, W. E.	UNIV MARYLAND-COL PK	NGR 21-002-002	Opik, E. J.	11	2157
HQ-SL	Young, R. S.	UNIV MARYLAND-COL PK	NGR 21-002-317	Ponnamperuma, C.	12	2182
HQ-SL	Geib, D. S.	UNIV MARYLAND-COL PK	NGR 21-002-317	Ponnamperuma, C.	12	2182
HQ-SL	Brunk, W. E.	UNIV OF MASS-AMHERST	NGL 22-010-023	Irvine, W. M.	11	2397
HQ-SL	Fellows, R. F.	UNIV OF MASS-AMHERST	NGL 22-010-023	Irvine, W. M.	11	2397
HQ-SL	Dwornik, S. E.	UNIV OF MASS-AMHERST	NGR 22-010-054	Hartshorn, J. H.	32	2403
HQ-SL	Dwornik, S. E.	UNIV OF MASS-AMHERST	NGR 22-010-076	McGill, G. E.	32	2405
HQ-SL	Allingham, J. W.	UNIV OF MASS-AMHERST	NGR 22-010-076	McGill, G. E.	32	2405
HQ-SL	Young, R. S.	UNIV OF MIAMI	NGR 10-007-008	Fox, S. W.	12	1808
HQ-SL	Young, R. S.	UNIV OF MIAMI	NGR 10-007-052	Harada, K.	12	1809
HQ-SL	Young, R. S.	UNIV OF MIAMI	NGR 10-007-054	Muller, G.	32	1810
HQ-SL	Fellows, R. F.	UNIV MICH-ANN ARBOR	NGR 23-005-094	Liu, V. C.	31	2454
HQ-SL	Hipsher, H. F.	UNIV MICH-ANN ARBOR	NGR 23-005-094	Liu, V. C.	31	2454
HQ-SL	Fellows, R. F.	UNIV MICH-ANN ARBOR	NGR 23-005-548	Nagy, A. F.	31	2474
HQ-SL	Fellows, R. F.	UNIV MICH-ANN ARBOR	NGR 23-005-561	Carignan, G. R.	31	2477
HQ-SL	Hipsher, H. F.	UNIV MICH-ANN ARBOR	NGR 23-005-561	Carignan, G. R.	31	2477
HQ-SL	Allingham, J. W.	UNIV MICH-ANN ARBOR	NGR 23-005-563	Smith, C. I.	32	2478
HQ-SL	Dwornik, S. E.	UNIV MICH-ANN ARBOR	NGR 23-005-563	Smith, C. I.	32	2478
HQ-SL	Fellows, R. F.	U MINN-MNPLS-ST PAUL	NGL 24-005-009	Nier, A. O.	31	2508
HQ-SL	Brunk, W. E.	U MINN-MNPLS-ST PAUL	NGL 24-005-009	Nier, A. O.	31	2508
HQ-SL	Gallagher, S. G.	U MINN-MNPLS-ST PAUL	NGL 24-005-160	Pflug, I. J.	51	2509
HQ-SL	Hall, L. B.	U MINN-MNPLS-ST PAUL	NGL 24-005-160	Pflug, I. J.	51	2509
HQ-SL	Young, R. S.	U MINN-MNPLS-ST PAUL	NGR 24-005-198	Schmidt, E. L.	51	2517
HQ-SL	Young, R. S.	U MINN-MNPLS-ST PAUL	NGR 24-005-275	Swain, F. M.	12	2523
HQ-SL	Fellows, R. F.	UNIV NEBRASKA-LINCLN	NGR 28-004-021	Samson, J. A.	31	2595
HQ-SL	Hipsher, H. F.	UNIV NEBRASKA-LINCLN	NGR 28-004-021	Samson, J. A.	31	2595
HQ-SL	Young, R. S.	UNIV NEVADA-L VEGAS	NGR 29-001-039	Tew, R. W.	51	2596
HQ-SL	Dwornik, S. E.	UNIV OF NEW MEXICO	NGR 32-004-062	Elston, W. E.	32	2704
HQ-SL	Allingham, J. W.	UNIV OF NEW MEXICO	NGR 32-004-062	Elston, W. E.	32	2704
HQ-SL	Morris, E. C.	UNIV OREGON-EUGENE	NGR 38-003-025	Goles, G. G.	32	3028
HQ-SL	Dwornik, S. E.	UNIV OREGON-EUGENE	NGR 38-003-025	Goles, G. G.	32	3028
HQ-SL	Dwornik, S. E.	UNIV OF PENNSYLVANIA	NGR 39-010-123	Faul, H.	11	3103
HQ-SL	Allingham, J. W.	UNIV OF PENNSYLVANIA	NGR 39-010-123	Faul, H.	11	3103
HQ-SL	Hipsher, H. F.	UNIV OF PITTSBURGH	NGL 39-011-013	Fite, W. L.	31	3105
HQ-SL	Fellows, R. F.	UNIV OF PITTSBURGH	NGL 39-011-013	Fite, W. L.	31	3105
HQ-SL	Fellows, R. F.	UNIV OF PITTSBURGH	NGL 39-011-030	Zipf, E. C.	31	3106
HQ-SL	Hipsher, H. F.	UNIV OF PITTSBURGH	NGL 39-011-030	Zipf, E. C.	31	3106
HQ-SL	Hipsher, H. F.	UNIV OF PITTSBURGH	NGR 39-011-137	Biondi, M. A.	31	3112
HQ-SL	Fellows, R. F.	UNIV OF PITTSBURGH	NGR 39-011-137	Biondi, M. A.	31	3112
HQ-SL	Dwornik, S. E.	UNIV OF PITTSBURGH	NGR 39-011-146	Hapke, B.	32	3114
HQ-SL	Allingham, J. W.	UNIV OF PITTSBURGH	NGR 39-011-146	Hapke, B.	32	3114

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HQ-SL	Young, R. S.	UNIV OF ROCHESTER	NGR 33-019-002	Vishniac, W. V.	51	2881
HQ-SL	Dwornik, S. E.	UNIV OF SANTA CLARA	NGR 05-017-037	Greeley, R.	32	1597
HQ-SL	Allingham, J. W.	UNIV OF SANTA CLARA	NGR 05-017-037	Greeley, R.	32	1597
HQ-SL	Hipsher, H. F.	UNIV OF SO CAROLINA	NGL 41-002-003	Durig, J. R.	31	3143
HQ-SL	Fellows, R. F.	UNIV OF SO CAROLINA	NGL 41-002-003	Durig, J. R.	31	3143
HQ-SL	Young, R. S.	UNIV OF SO CAROLINA	NGR 41-002-034	Rohlfing, D. L.	12	3145
HQ-SL	Fellows, R. F.	UNIV OF SOUTHERN CAL	NGR 05-018-138	Judge, D. L.	31	1611
HQ-SL	Hipsher, H. F.	UNIV OF SOUTHERN CAL	NGR 05-018-138	Judge, D. L.	31	1611
HQ-SL	Hipsher, H. F.	UNIV OF SOUTHERN CAL	NGR 05-018-178	Maxworthy, T.	31	1613
HQ-SL	Fellows, R. F.	UNIV OF SOUTHERN CAL	NGR 05-018-178	Maxworthy, T.	31	1613
HQ-SL	Fellows, R. F.	UNIV OF SOUTHERN CAL	NGR 05-018-180	Judge, D. L.	31	1614
HQ-SL	Fellows, R. F.	UNIV TENNESSEE-KNOXV	NGL 43-001-006	Gailer, N. M.	31	3165
HQ-SL	Hipsher, H. F.	UNIV TENNESSEE-KNOXV	NGL 43-001-006	Gailer, N. M.	31	3165
HQ-SL		UNIV TEXAS-AUSTIN	NASR 242	Smith, H. J.	11	3333
HQ-SL	Brunk, W. E.	UNIV TEXAS-AUSTIN	NGL 44-012-006	Cogdell, J. R.	45	3334
HQ-SL	Fellows, R. F.	UNIV TEXAS-AUSTIN	NGL 44-012-006	Cogdell, J. R.	45	3334
HQ-SL	Fellows, R. F.	UNIV TEXAS-AUSTIN	NGL 44-012-055	Douglas, J. N.	11	3337
HQ-SL	Brunk, W. E.	UNIV TEXAS-AUSTIN	NGL 44-012-055	Douglas, J. N.	11	3337
HQ-SL	Roman, N. G.	UNIV TEXAS-AUSTIN	NGR 44-012-152	Smith, H. J.	11	3339
HQ-SL	Brunk, W. E.	UNIV TEXAS-AUSTIN	NGR 44-012-152	Smith, H. J.	11	3339
HQ-SL	Brunk, W. E.	UNIV TEXAS-AUSTIN	NGR 44-012-165	Smith, H. J.	11	3340
HQ-SL	Allingham, J. W.	UNIV TEXAS-AUSTIN	NGR 44-012-194	Ingerson, F. E.	11	3341
HQ-SL	Dwornik, S. E.	UNIV TEXAS-AUSTIN	NGR 44-012-194	Ingerson, F. E.	11	3341
HQ-SL	Brunk, W. E.	UNIV TEXAS-AUSTIN	NGR 44-012-202	Smith, H. J.	11	3342
HQ-SL	Fellows, R. F.	UNIV TEXAS-AUSTIN	NGR 44-012-202	Smith, H. J.	11	3342
HQ-SL	Young, R. S.	UNIV TEXAS-AUSTIN	NGR 44-012-225	Parker, P. L.	32	3348
HQ-SL	Fellows, R. F.	UNIV TEXAS-DALLAS	NGL 44-004-001	Johnson, F. S.	31	3373
HQ-SL	Hipsher, H. F.	UNIV TEXAS-DALLAS	NGL 44-004-001	Johnson, F. S.	31	3373
HQ-SL	Hipsher, H. F.	UNIV TEXAS-DALLAS	NGL 44-004-026	Johnson, F. S.	31	3374
HQ-SL	Fellows, R. F.	UNIV TEXAS-DALLAS	NGL 44-004-026	Johnson, F. S.	31	3374
HQ-SL	Dwornik, S. E.	UNIV OF UTAH	NGR 45-003-085	Wilson, R. C.	32	3421
HQ-SL	Morris, E. C.	UNIV OF UTAH	NGR 45-003-085	Wilson, R. C.	32	3421
HQ-SL	Allingham, J. W.	UNIV OF UTAH	NGR 45-003-095	Wilson, R. C.	32	3424
HQ-SL	Dwornik, S. E.	UNIV OF UTAH	NGR 45-003-095	Wilson, R. C.	32	3424
HQ-SL	Allingham, J. W.	UNIV OF VIRGINIA	NGR 47-005-172	Dolan, R.	32	3480
HQ-SL	Dwornik, S. E.	UNIV OF VIRGINIA	NGR 47-005-172	Dolan, R.	32	3480
HQ-SL	Easter, D. P.	UNIV OF WASHINGTON	NGR 48-002-073	Leovy, C. B.	31	3537
HQ-SL	Fellows, R. F.	UNIV OF WASHINGTON	NGR 48-002-073	Leovy, C. B.	31	3537
HQ-SL	Young, R. S.	UNIV OF WASHINGTON	NGR 48-002-130	Gordon, M. P.	51	3543
HQ-SL	Brunk, W. E.	UNIV OF WASHINGTON	NGR 48-002-142	Greene, T. F.	11	3548
HQ-SL	Fellows, R. F.	UNIV OF WASHINGTON	NGR 48-002-142	Greene, T. F.	11	3548
HQ-SL	Allingham, J. W.	UNIV OF WASHINGTON	NGR 48-002-153	Vgolihi, F. C.	32	3551
HQ-SL	Dwornik, S. E.	UNIV OF WASHINGTON	NGR 48-002-153	Vgolihi, F. C.	32	3551
HQ-SL	Fellows, R. F.	UNIV WISC-MADISON	NGR 50-002-140	Weinman, J. A.	31	3587
HQ-SL	Hipsher, H. F.	UNIV WISC-MADISON	NGR 50-002-140	Weinman, J. A.	31	3587
HQ-SL	Keller, J. W.	UNIV WISC-MADISON	NGR 50-002-170	Suomi, V. E.	31	3591
HQ-SL	Mitz, M. A.	UNIV WISC-MADISON	NGR 50-002-170	Suomi, V. E.	31	3591
HQ-SL	Fellows, R. F.	UNIV WISC-MADISON	NGR 50-002-189	Suomi, V. E.	31	3594
HQ-SL	Dwornik, S. E.	UNIV WISC-MADISON	NGR 50-002-189	Suomi, V. E.	31	3594
HQ-SL	Fellows, R. F.	UNIV WISC-MADISON	NGR 50-002-199	Weinman, J. A.	31	3596
HQ-SL	Young, R. S.	UTAH STATE UNIV	NGR 45-002-008	Salisbury, F. B.	51	3425
HQ-SL		VIRGINIA POLY INST	NGL 47-004-080	McGee, H. A.	11	3503
HQ-SL	Dwornik, S. E.	VIRGINIA STATE COL	NGR 47-014-004	Gipson, M., Jr.	32	3523
HQ-SL	Allingham, J. W.	VIRGINIA STATE COL	NGR 47-014-004	Gipson, M., Jr.	32	3523
HQ-SL		WEST TEXAS ST UNIV	NGR 44-015-003		32	3409
HQ-SL	Fellows, R. F.	YALE UNIVERSITY	NGL 07-004-043	Cross, R. J., Jr.	31	1708
HQ-SL	Hipsher, H. F.	YALE UNIVERSITY	NGL 07-004-043	Cross, R. J., Jr.	31	1708
HQ-SL	Young, R. S.	YALE UNIVERSITY	NGR 07-004-009	Morowitz, H. J.	51	1710

NASA'S UNIVERSITY PROGRAM

APPENDIX C CROSS INDEX BY TECHNICAL OFFICER LOCATION

TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SL	Burk, W. E.	YALE UNIVERSITY	NGR 07-004-010	Carter, N. L.	32	1711
HQ-SL	Young, R. S.	YALE UNIVERSITY	NGR 07-004-034	McAlester, A. L.	32	1713
HQ-SL	Allingham, J. W.	YALE UNIVERSITY	NGR 07-004-144	Skinner, B. J.	32	1718
HQ-SL	Morris, E. C.	YALE UNIVERSITY	NGR 07-004-144	Skinner, B. J.	32	1718
HQ-SL	Allingham, J. W.	YALE UNIVERSITY	NGR 07-004-157	Skinner, B. J.	32	1720
HQ-SL	Dwornik, S. E.	YALE UNIVERSITY	NGR 07-004-157	Skinner, B. J.	32	1720
HQ-SM	Bryson, R. P.	ARIZONA STATE UNIV	NGL 03-001-001	Moore, C. B.	32	1110
HQ-SM	Pomeroy, J. H.	ARIZONA STATE UNIV	NGL 03-001-001	Moore, C. B.	32	1110
HQ-SM	Bryson, R. P.	BOSTON UNIVERSITY	NGR 22-004-027	Brewer, T.	32	2212
HQ-SM	Bryson, R. P.	BROWN UNIVERSITY	NGR 40-002-116	Head, J. W.	32	3129
HQ-SM	Allenby, R. J.	BROWN UNIVERSITY	NGR 40-002-116	Head, J. W.	32	3129
HQ-SM	Allenby, R. J.	CALIF INST OF TECH	NGL 05-002-069	Anderson, D. L.	32	1199
HQ-SM	Bryson, R. P.	CALIF INST OF TECH	NGL 05-002-069	Anderson, D. L.	32	1199
HQ-SM	Bryson, R. P.	CALIF INST OF TECH	NGL 05-002-105	Ahrens, T. J.	32	1201
HQ-SM	Allenby, R. J.	CALIF INST OF TECH	NGL 05-002-105	Ahrens, T. J.	32	1201
HQ-SM	Allenby, R. J.	CALIF INST OF TECH	NGR 05-002-158	Ingersoll, A. P.	32	1216
HQ-SM	Bryson, R. P.	CALIF INST OF TECH	NGR 05-002-158	Ingersoll, A. P.	32	1216
HQ-SM	Bryson, R. P.	CAL STATE U-LG BEACH	NGR 05-013-023	Green, J.	32	1246
HQ-SM	Bryson, R. P.	COLLEGE VIRGIN ISLND	NGR 52-083-003	Adams, J. B.	32	3612
HQ-SM	Allenby, R. J.	COLLEGE VIRGIN ISLND	NGR 52-083-003	Adams, J. B.	32	3612
HQ-SM	Bryson, R. P.	COLUMBIA UNIVERSITY	NGR 33-008-106	Dalziel, I. W.	32	2734
HQ-SM	Bryson, R. P.	CORNELL UNIVERSITY	NGL 33-010-005	Gold, T.	19	2755
HQ-SM	Allenby, R. J.	CORNELL UNIVERSITY	NGL 33-010-005	Gold, T.	19	2755
HQ-SM	Allenby, R. J.	CORNELL UNIVERSITY	NGR 33-010-108	Turcotte, D. L.	32	2768
HQ-SM	Bryson, R. P.	CORNELL UNIVERSITY	NGR 33-010-108	Turcotte, D. L.	32	2768
HQ-SM	Bryson, R. P.	CORNELL UNIVERSITY	NGR 33-010-178	Kuckes, A. F.	32	2776
HQ-SM	Allenby, R. J.	CORNELL UNIVERSITY	NGR 33-010-178	Kuckes, A. F.	32	2776
HQ-SM	Esenwein, G. F.	DUDLEY OBSERVATORY	NGR 33-011-031	Mercer, R.	11	2790
HQ-SM	Bryson, R. P.	FAIRLEIGH-DICKNSON U	NGL 31-006-010	Adams, J. B.	32	2620
HQ-SM	Allenby, R. J.	FAIRLEIGH-DICKNSON U	NGL 31-006-010	Adams, J. B.	32	2620
HQ-SM	Allenby, R. J.	HARVARD UNIVERSITY	NGR 22-007-175	Hays, J. F.	32	2234
HQ-SM	Bryson, R. P.	HARVARD UNIVERSITY	NGR 22-007-175	Hays, J. F.	32	2234
HQ-SM	Bryson, R. P.	ILL INST OF TECH	NGR 14-004-049	Higgins, G. T.	39	1887
HQ-SM	Bryson, R. P.	JOHNS HOPKINS UNIV	NGR 21-001-080	Marcus, A. H.	32	2135
HQ-SM	Allenby, R. J.	JOHNS HOPKINS UNIV	NGR 21-001-080	Marcus, A. H.	32	2135
HQ-SM	Pomeroy, J. H.	LEHIGH UNIVERSITY	NGR 39-007-043	Goldstein, J. I.	32	3056
HQ-SM	Bryson, R. P.	LEHIGH UNIVERSITY	NGR 39-007-043	Goldstein, J. I.	32	3056
HQ-SM	Bryson, R. P.	MASS INST OF TECH	NGL 22-009-187	Press, F.	11	2320
HQ-SM	Allenby, R. J.	MASS INST OF TECH	NGL 22-009-187	Press, F.	11	2320
HQ-SM	Allenby, R. J.	MASS INST OF TECH	NGR 22-009-350	McCord, T. B.	32	2339
HQ-SM	Bryson, R. P.	MASS INST OF TECH	NGR 22-009-350	McCord, T. B.	32	2339
HQ-SM	Bryson, R. P.	NORTHWESTERN UNIV	NGL 14-007-016	Hynek, J. A.	32	1891
HQ-SM	Allenby, R. J.	NORTHWESTERN UNIV	NGL 14-007-016	Hynek, J. A.	32	1891
HQ-SM	Pomeroy, J. H.	OREGON STATE UNIV	NGL 38-002-020	Schmitt, R. A.	32	3013
HQ-SM	Bryson, R. P.	OREGON STATE UNIV	NGL 38-002-020	Schmitt, R. A.	32	3013
HQ-SM	Bryson, R. P.	PENNSYLVANIA STATE U	NGL 39-009-010	Gold, D. P.	32	3073
HQ-SM	Allenby, R. J.	PENNSYLVANIA STATE U	NGL 39-009-010	Gold, D. P.	32	3073
HQ-SM	Allenby, R. J.	PRINCETON UNIVERSITY	NGL 31-001-003	Deffeyes	39	2637
HQ-SM	Bryson, R. P.	PRINCETON UNIVERSITY	NGL 31-001-003	Deffeyes	39	2637
HQ-SM	Strickland, A. T.	PRINCETON UNIVERSITY	NGR 31-001-202	Dicke, R. H.	13	2656
HQ-SM	Bryson, R. P.	PRINCETON UNIVERSITY	NGR 31-001-274	Phinney, R. A.	32	2667
HQ-SM	Bryson, R. P.	PURDUE UNIVERSITY	NGL 15-005-140	Lipschutz, M. E.	32	1995
HQ-SM	Bryson, R. P.	SO DAKOTA SCHL MINES	NGR 42-001-006	Rahn, P. H.	32	3148
HQ-SM	Allenby, R. J.	SO DAKOTA SCHL MINES	NGR 42-001-006	Rahn, P. H.	32	3148
HQ-SM	Allenby, R. J.	STANFORD UNIVERSITY	NGL 05-020-232	Kovach, R. L.	39	1308
HQ-SM	Bryson, R. P.	STANFORD UNIVERSITY	NGL 05-020-232	Kovach, R. L.	39	1308
HQ-SM	Bryson, R. P.	TEXAS A&M UNIVERSITY	NGR 44-001-152	Rowe, M. W.	32	3270
HQ-SM	Allenby, R. J.	TEXAS A&M UNIVERSITY	NGR 44-001-152	Rowe, M. W.	32	3270

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SM	Allenby, R. J.	UNIV OF ARIZONA	NGL 03-002-191	Kuiper, G. P.	32	1144
HQ-SM	Bryson, R. P.	UNIV OF ARIZONA	NGL 03-002-191	Kuiper, G. P.	32	1144
HQ-SM	Bryson, R. B.	UNIV OF ARIZONA	NGR 03-002-153	Tiftt, W. G.	11	1148
HQ-SM	Allehby, R. J.	UNIV OF ARIZONA	NGR 03-002-153	Tiftt, W. G.	11	1148
HQ-SM	Senich, D.	UNIV CALIF-BERKELEY	NGR 05-003-406	Mitchell, J. K.	32	1414
HQ-SM	Bryson, R. P.	UNIV CALIF-BERKELEY	NGR 05-003-406	Mitchell, J. K.	32	1414
HQ-SM	Bryson, R. P.	UNIV CALIF-DAVIS	NGR 05-004-074	Borg, R. J.	32	1461
HQ-SM	Allenby, R. J.	UNIV CALIF-DAVIS	NGR 05-004-074	Borg, R. J.	32	1461
HQ-SM	Allenby, R. J.	UNIV CALIF-L ANGELES	NGL 05-007-002	Kaula, W. M.	32	1481
HQ-SM	Bryson, R. P.	UNIV CALIF-L ANGELES	NGL 05-007-002	Kaula, W. M.	32	1481
HQ-SM	Bryson, R. P.	UNIV CALIF-L ANGELES	NGL 05-007-005	Wetherill, G. W.	32	1484
HQ-SM	Pomeroy, J. H.	UNIV CALIF-L ANGELES	NGL 05-007-005	Wetherill, G. W.	32	1484
HQ-SM	Allenby, R. J.	UNIV CALIF-L ANGELES	NGL 05-007-006	Kennedy, G. C.	32	1485
HQ-SM	Bryson, R. P.	UNIV CALIF-L ANGELES	NGL 05-007-006	Kennedy, G. C.	32	1485
HQ-SM	Strickland, A. T.	UNIV CALIF-L ANGELES	NGR 05-007-283	Kaula, W. M.	13	1500
HQ-SM	Bryson, R. P.	UNIV CALIF-L ANGELES	NGR 05-007-329	Stein, W. A.	32	1510
HQ-SM	Pomeroy, J. H.	UNIV CALIF-L ANGELES	NGR 05-007-329	Stein, W. A.	32	1510
HQ-SM	Allenby, R. J.	UNIV CALIF-L ANGELES	NGR 05-007-351	Coleman, P. J.	32	1513
HQ-SM	Bryson, R. P.	UNIV CALIF-L ANGELES	NGR 05-007-351	Coleman, P. J.	32	1513
HQ-SM	Bryson, R. P.	UNIV CALIF-SAN DIEGO	NGL 05-009-002	Arrhenius, G.	32	1538
HQ-SM	Allenby, R. J.	UNIV CALIF-SAN DIEGO	NGL 05-009-002	Arrhenius, G.	32	1538
HQ-SM	Pomeroy, J. H.	UNIV CALIF-SAN DIEGO	NGL 05-009-004	Arnold, J. R.	32	1539
HQ-SM	Bryson, R. P.	UNIV CALIF-SAN DIEGO	NGL 05-009-004	Arnold, J. R.	32	1539
HQ-SM	Bryson, R. P.	UNIV CALIF-SAN DIEGO	NGL 05-009-005	Suess, H. E.	32	1540
HQ-SM	Pomeroy, J. H.	UNIV CALIF-SAN DIEGO	NGL 05-009-005	Suess, H. E.	32	1540
HQ-SM	Allenby, R. J.	UNIV CALIF-SAN DIEGO	NGR 05-005-005	Arnold, J. R.	32	1549
HQ-SM	Bryson, R. P.	UNIV CALIF-SAN DIEGO	NGR 05-005-005	Arnold, J. R.	32	1549
HQ-SM	Bryson, R. P.	UNIV CALIF-SAN DIEGO	NGR 05-009-170	Marti, K.	32	1558
HQ-SM	Pomeroy, J. H.	UNIV CALIF-SAN DIEGO	NGR 05-009-170	Marti, K.	32	1558
HQ-SM	Bryson, R. P.	UNIV CALIF-SAN DIEGO	NGR 05-009-197	Waggoner, J. A.	12	1565
HQ-SM	Bryson, R. P.	UNIV CALIF-S BARBARA	NGL 05-010-019	Fisher, R. V.	32	1574
HQ-SM	Allenby, R. J.	UNIV CALIF-S BARBARA	NGL 05-010-019	Fisher, R. V.	32	1574
HQ-SM	Pomeroy, J. H.	UNIV OF CHICAGO	NGL 14-001-010	Anders, E.	32	1921
HQ-SM	Bryson, R. P.	UNIV OF CHICAGO	NGL 14-001-010	Anders, E.	32	1921
HQ-SM	Bryson, R. P.	UNIV OF CHICAGO	NGR 14-001-249	Grossman, L.	32	1946
HQ-SM	Pomeroy, J. H.	UNIV OF CHICAGO	NGR 14-001-249	Grossman, L.	32	1946
HQ-SM	Strickland, A. T.	UNIV OF HAWAII	NASW 2326	Jefferies, J. T.	11	1868
HQ-SM	Strickland, A. T.	UNIV OF HAWAII	NGF 12-001-102	Jefferies, J. T.	11	1869
HQ-SM	Bryson, R. P.	UNIV OF HOUSTON	NGR 44-005-188	King, E. A., Jr.	32	3319
HQ-SM	Pomeroy, J. H.	UNIV OF HOUSTON	NGR 44-005-188	King, E. A., Jr.	32	3319
HQ-SM	Allenby, R. J.	UNIV OF IDAHO	NGR 13-001-014	Hall, W. B.	32	1884
HQ-SM	Bryson, R. P.	UNIV OF IDAHO	NGR 13-001-014	Hall, W. B.	32	1884
HQ-SM	Strickland, A. T.	UNIV MARYLAND-COL PK	NGR 21-002-267	Currie, D. G.	13	2172
HQ-SM	Bryson, R. P.	UNIV MARYLAND-COL PK	NGR 21-002-296	Pai, S. I.	31	2176
HQ-SM	Bryson, R. P.	UNIV OF MASS-AMHERST	NGR 22-010-052	McGill, G. E.	32	2402
HQ-SM	Allenby, R. J.	UNIV OF MASS-AMHERST	NGR 22-010-052	McGill, G. E.	32	2402
HQ-SM	Bryson, R. P.	UNIV MICH-ANN ARBOR	NGR 23-005-537	Evans, B. J.	32	2470
HQ-SM	Bryson, R. P.	UNIV OF NEW MEXICO	NGL 32-004-011	Keil, K.	32	2699
HQ-SM	Pomeroy, J. H.	UNIV OF NEW MEXICO	NGL 32-004-011	Keil, K.	32	2699
HQ-SM	Pomeroy, J. H.	UNIV OF NEW MEXICO	NGL 32-004-064	Keil, K.	32	2702
HQ-SM	Bryson, R. P.	UNIV OF NEW MEXICO	NGL 32-004-064	Keil, K.	32	2702
HQ-SM	Bryson, R. P.	UNIV OREGON-EUGENE	NGL 38-003-010	Goles, G. G.	32	3024
HQ-SM	Bryson, R. P.	UNIV OREGON-EUGENE	NGR 38-003-020	Weill, D. F.	32	3027
HQ-SM	Allenby, R. J.	UNIV OREGON-EUGENE	NGR 38-003-020	Weill, D. F.	32	3027
HQ-SM	Bryson, R. P.	UNIV OF PITTSBURGH	NGL 39-011-080	Mitroff, I.	99	3108
HQ-SM	Allenby, R. J.	UNIV OF PITTSBURGH	NGL 39-011-080	Mitroff, I.	99	3108
HQ-SM	Bryson, R. P.	UNIV OF PITTSBURGH	NGL 39-011-085	Hapke, B. W.	32	3109
HQ-SM	Allenby, R. J.	UNIV OF PITTSBURGH	NGL 39-011-085	Hapke, B. W.	32	3109

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TECH OFF LOC	TECHNICAL OFFICER	INSTITUTION	GRANT/ CONTRACT NUMBER	FIRST PRINCIPAL INVESTIGATOR	FIELD CODE	ACC NO.
HQ-SM	Pomeroy, J. H.	UNIV OF PITTSBURGH	NGR 39-011-156	Fuller, M.	32	3116
HQ-SM	Bryson, R. P.	UNIV OF PITTSBURGH	NGR 39-011-156	Fuller, M.	32	3116
HQ-SM	Bryson, R. P.	UNIV TEXAS-AUSTIN	NGL 44-012-045	Clabaugh, S. E.	32	3336
HQ-SM	Allenby, R. J.	UNIV TEXAS-AUSTIN	NGL 44-012-045	Clabaugh, S. E.	32	3336
HQ-SM	Strickland, A. T.	UNIV TEXAS-AUSTIN	NGR 44-012-165	Smith, H. J.	11	3340
HQ-SM	Strickland, A. T.	UNIV TEXAS-AUSTIN	NGR 44-012-219	Mulholland, J. D.	11	3345
HQ-SM	Bryson, R. P.	UNIV TEXAS-EL PASO	NGR 44-012-147	Hoffer, J. M.	32	3388
HQ-SM	Allenby, R. J.	UNIV TEXAS-EL PASO	NGR 44-012-147	Hoffer, J. M.	32	3388
HQ-SM	Pomeroy, J. H.	UNIV OF VIRGINIA	NGR 47-005-176	Allen, R. O.	32	3481
HQ-SM	Bryson, R. P.	UNIV OF VIRGINIA	NGR 47-005-176	Allen, R. O.	32	3481
HQ-SM	Strickland, A. T.	WESLEYAN UNIVERSITY	NGR 07-006-008	Faller, J. E.	13	1704
HQ-SM	Bryson, R. P.	YALE UNIVERSITY	NGL 07-004-103	Skinner, B. J.	32	1709
HQ-SS		MASS INST OF TECH	NGR 22-009-102	Biemann, K.	42	2334
HQ-SS	Starr, W. L.	UNIV MO-KANSAS CITY	NAS 2-7078		39	2564
HQ-SV		UNIV OF ROME	NASW 1761		49	3622
HQ-TN		UNIV OF ROME	NASW 2135		42	3623

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APPENDIX D

CROSS INDEX BY RTOP (Research and Technology Operating Plans)

Each entry represents a single grant or contract and there is one RTOP listed for each grant or contract. However, several grants or contracts may carry the same RTOP. The installation listed provided funding associated with the RTOP. A brief explanation of the RTOP system of notation appears in the prefatory pages.

RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.	RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.
010-00-00	HQ	CAL STATE U-LG BEACH	1244	114-08-06	ARC	UNIV MARYLAND-COL PK	2187
010-00-00	HQ	CAL STATE U-LG BEACH	1247	115-04-60	HQ	STANFORD UNIVERSITY	1371
010-00-00	HQ	GEORGE WASHINGTON U	1762	115-21-01	LARC	GEORGIA INST OF TECH	1825
010-00-00	HQ	GEORGE WASHINGTON U	1763	115-21-10	GSFC	LAVAL UNIVERSITY	3613
010-00-00	HQ	OHIO STATE UNIV	2962	115-22-05	MSFC	MASS INST OF TECH	2276
010-00-00	HQ	PRATT INSTITUTE	2829	115-25-01	LARC	SOUTHERN METHODIST U	3238
010-00-00	HQ	UNIV OF SO FLORIDA	1817	117-07-03	LARC	UNIV OF VIRGINIA	3482
016-00-00	HQ	HARVARD UNIVERSITY	2239	117-07-03	LARC	VIRGINIA POLY INST	3506
016-00-00	HQ	UNIV MICH-ANN ARBOR	2456	117-07-04	ARC	UNIV CALIF-SAN DIEGO	1563
023-00-00	ARC	OKLAHOMA STATE UNIV	3000	120-00-00	LERC	CAL STATE U-LG BEACH	1245
023-00-00	HQ	DUKE UNIVERSITY	2890	120-00-00	LERC	CITY COLLEGE OF N Y	2709
023-00-00	HQ	OKLAHOMA STATE UNIV	3001	120-00-00	LERC	NORTHEASTERN UNIV	2381
023-00-00	HQ	OREGON STATE UNIV	3018	120-00-00	LERC	UNIV TENNESSEE-KNOXV	3170
023-00-00	HQ	UNIV NEBRASKA-LINCLN	2593	120-60-03	LERC	HARVARD UNIVERSITY	2233
039-00-00	GSFC	MORGAN STATE COLLEGE	2144	122-00-00	LERC	CITY COLLEGE OF N Y	2711
039-00-00	JSC	TEXAS SOUTHERN UNIV	3273	122-00-00	LERC	ILL INST OF TECH	1885
039-00-00	LERC	CASE WESTERN RESERVE	2942	122-00-00	LERC	UNIV MARYLAND-COL PK	2154
039-00-00	WS	UNIV MD-EASTRN SHORE	2198	122-00-00	HQ	ILL INST OF TECH	1886
110-00-00	ARC	STANFORD UNIVERSITY	1262	122-29-13	HQ	NORTHEASTERN UNIV	2387
110-06-05	LARC	UNIV OF CINCINNATI	2983	124-00-00	ARC	UNIV MO-ROLLA	2569
112-02-20	HQ	PRINCETON UNIVERSITY	2650	124-00-00	GSFC	CATHOLIC UNIVERSITY	1738
112-02-21	LERC	KENT STATE UNIV	2953	124-00-00	JSC	OREGON STATE UNIV	3014
112-02-21	LERC	UNIV OF CINCINNATI	2985	124-00-00	JSC	TEXAS A&M UNIVERSITY	3263
112-02-22	ARC	UNIV OF SANTA CLARA	1589	124-00-00	JSC	UNIV TEXAS-AUSTIN	3326
112-02-22	HQ	NO CAROLINA STATE U	2899	124-00-00	LARC	CLARKSON COL OF TECH	2716
112-02-22	HQ	NO CAROLINA STATE U	2910	124-00-00	LARC	COLLEGE OF WM & MARY	3434
112-02-23	LARC	COLLEGE OF WM & MARY	3431	124-00-00	LARC	HARVARD UNIVERSITY	2223
112-28-20	LERC	GEORGIA INST OF TECH	1847	124-00-00	LARC	LA STATE U-BAT ROUGE	2095
112-29-13	HQ	PRINCETON UNIVERSITY	2660	124-00-00	LARC	MICHIGAN STATE UNIV	2412
112-30-13	MSFC	UNIV OF MASS-AMHERST	2395	124-00-00	LARC	NO CAROLINA STATE U	2903
112-30-17	HQ	MASS INST OF TECH	2361	124-00-00	LARC	UNIV ILLINOIS-URBANA	1959
113-26-14	LARC	PRINCETON UNIVERSITY	2664	124-00-00	LARC	UNIV OF VIRGINIA	3473
113-31-08	LERC	CAL STATE U-SACRAMEN	1249	124-00-00	MSFC	AUBURN UNIV-AUBURN	1012
113-31-08	LERC	PRINCETON UNIVERSITY	2642	124-00-00	MSFC	COLORADO SCH OF MINE	1621
113-31-12	MSFC	CALIF INST OF TECH	1187	124-00-00	MSFC	PENNSYLVANIA STATE U	3067
113-31-12	MSFC	UNIV MICH-ANN ARBOR	2442	124-00-00	MSFC	PURDUE UNIVERSITY	1988
113-31-14	MSFC	CALIF INST OF TECH	1189	124-00-00	MSFC	UNIV ALA-TUSCALOOSA	1075
113-31-16	LERC	UNIV OF KENTUCKY	2075	124-00-00	HQ	CASE WESTERN RESERVE	2929
114-03-03	LARC	OLD DOMINION UNIV	3455	124-00-00	HQ	PURDUE UNIVERSITY	2012
114-03-03	MSFC	CLARK UNIVERSITY	2215	124-07-24	LARC	NO CAROLINA STATE U	2894
114-03-05	MSFC	UNIV N CAR-CHPL HILL	2919	124-07-26	LARC	VIRGINIA POLY INST	3504
114-03-05	MSFC	UNIV SAN FRANCISCO	1585	124-08-14	LARC	DREXEL UNIVERSITY	3047
114-03-07	MSFC	SO DAKOTA SCHL MINES	3146	124-08-31	LARC	OHIO STATE UNIV	2966
114-03-07	MSFC	UNIV ALA-HUNTSVILLE	1053	124-08-42	LERC	UNIV WISC-MADISON	3590
114-03-24	LERC	UNIV CALIF-L ANGELES	1492	124-09-25	LARC	TENNESSEE TECH U	3152
114-03-25	MSFC	AUBURN UNIV-AUBURN	1014	124-09-30	LARC	UNIV OF SO FLORIDA	1818
114-03-30	ARC	UNIV CALIF-L ANGELES	1514	124-12-11	MSFC	GEORGIA INST OF TECH	1830
114-08-05	LARC	UNIV MICH-ANN ARBOR	2449	124-12-11	MSFC	UNIV ALA-HUNTSVILLE	1043

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125-00-00	ARC	CORNELL UNIVERSITY	2744	125-24-04	LARC	UNIV MICH-ANN ARBOR	2461
125-00-00	ARC	STANFORD UNIVERSITY	1317	126-00-00	ARC	STANFORD UNIVERSITY	1266
125-00-00	ARC	UNIV OF SANTA CLARA	1590	126-00-00	ARC	UNIV CALIF-DAVIS	1443
125-00-00	ARC	UTAH STATE UNIV	3426	126-00-00	LARC	CARNEGIE-MELLON UNIV	3035
125-00-00	ERC	AUBURN UNIV-AUBURN	1024	126-00-00	LARC	CORNELL UNIVERSITY	2760
125-00-00	ERC	BROWN UNIVERSITY	3122	126-00-00	LARC	GEORGE WASHINGTON U	1755
125-00-00	ERC	BROWN UNIVERSITY	3123	126-00-00	LARC	HAMPTON INSTITUTE	3438
125-00-00	ERC	CALIF INST OF TECH	1200	126-00-00	LARC	MASS INST OF TECH	2249
125-00-00	ERC	CASE WESTERN RESERVE	2932	126-00-00	LARC	MASS INST OF TECH	2324
125-00-00	ERC	CORNELL UNIVERSITY	2757	126-00-00	LARC	OLD DOMINION UNIV	3444
125-00-00	ERC	MASS INST OF TECH	2323	126-00-00	LARC	OLD DOMINION UNIV	3450
125-00-00	ERC	MASS INST OF TECH	2325	126-00-00	LARC	ROSE-HULMAN INST TEC	2014
125-00-00	ERC	NORTHEASTERN UNIV	2382	126-00-00	LARC	ST LOUIS UNIVERSITY	2549
125-00-00	ERC	POLY INST BROOKLYN	2823	126-00-00	LARC	STANFORD UNIVERSITY	1316
125-00-00	ERC	PURDUE UNIVERSITY	2000	126-00-00	LARC	SYRACUSE UNIVERSITY	2871
125-00-00	ERC	STANFORD UNIVERSITY	1305	126-00-00	LARC	UNIV CALIF-S BARBARA	1576
125-00-00	ERC	UNIV CALIF-BERKELEY	1408	126-00-00	LARC	UNIV OF KANSAS	2061
125-00-00	ERC	UNIV MICH-ANN ARBOR	2450	126-00-00	LARC	UNIV OF VIRGINIA	3474
125-00-00	ERC	UNIV TENNESSEE-KNOXV	3167	126-00-00	LARC	UNIV OF WYOMING	3606
125-00-00	GSFC	CORNELL UNIVERSITY	2764	126-00-00	LERC	CAL STATE U-CHICO	1239
125-00-00	GSFC	GEORGE WASHINGTON U	1752	126-00-00	MSFC	WAYNE STATE UNIV	2485
125-00-00	GSFC	PRINCETON UNIVERSITY	2652	126-13-10	ARC	UNIV CALIF-BERKELEY	1422
125-00-00	GSFC	STATE U NY-STONY BRK	2853	126-13-10	ARC	UNIV CALIF-L ANGELES	1506
125-00-00	GSFC	UNIV OF ARIZONA	1152	126-14-14	LARC	MASS INST OF TECH	2329
125-00-00	GSFC	UNIV CALIF-SAN DIEGO	1542	126-61-10	MSFC	PENNSYLVANIA STATE U	3068
125-00-00	GSFC	UNIV OF HAWAII	1872	126-61-10	MSFC	UNIV TENNESSEE-KNOXV	3160
125-00-00	GSFC	UNIV MARYLAND-COL PK	2155	126-61-12	LARC	STEVENS INST OF TECH	2679
125-00-00	GSFC	UNIV MARYLAND-COL PK	2165	126-61-14	LARC	LOUGHBOROUGH U TECH	3618
125-00-00	GSFC	UNIV MARYLAND-COL PK	2167	126-61-14	LERC	GEORGIA INST OF TECH	1827
125-00-00	GSFC	UNIV OF RHODE ISLAND	3132	126-63-10	LERC	CASE WESTERN RESERVE	2939
125-00-00	GSFC	UNIV OF RHODE ISLAND	3132	126-63-10	LERC	CASE WESTERN RESERVE	2940
125-00-00	JSC	AUBURN UNIV-AUBURN	1025	126-63-10	LERC	IOWA STATE UNIV	2021
125-00-00	LARC	CITY COLLEGE OF N Y	2714	126-63-10	LERC	NORTHWESTERN UNIV	1900
125-00-00	LARC	CLEMSON UNIV-CLEMSON	3136	126-63-10	LERC	PURDUE UNIVERSITY	2003
125-00-00	LARC	MARQUETTE UNIVERSITY	3559	126-63-10	LERC	UNIV OF CINCINNATI	2986
125-00-00	LARC	NO CAROLINA STATE U	2900	126-63-10	LERC	UNIV ILLINOIS-URBANA	1964
125-00-00	LARC	NO CAROLINA STATE U	2905	126-63-10	LERC	UNIV OF TOLEDO	2997
125-00-00	LARC	OLD DOMINION UNIV	3448	126-9X-00	ARC	PENNSYLVANIA STATE U	3064
125-00-00	LARC	RENSSELAER-CONN	1691	126-9X-00	ARC	WASHINGTON UNIVERSTY	2573
125-00-00	LARC	SOUTHERN METHODIST U	3234	127-00-00	ARC	HARVARD UNIVERSITY	2226
125-00-00	LARC	UNIV OF NEW MEXICO	2703	127-00-00	ARC	PENNSYLVANIA STATE U	3081
125-00-00	LARC	UNIV OF VIRGINIA	3476	127-00-00	ARC	STANFORD UNIVERSITY	1307
125-00-00	MSFC	MASS INST OF TECH	2269	127-00-00	ARC	STANFORD UNIVERSITY	1315
125-00-00	HQ	AMERICAN UNIVERSITY	1732	127-00-00	ARC	UNIV CALIF-DAVIS	1456
125-00-00	HQ	MASS INST OF TECH	2310	127-00-00	ARC	UNIV WISC-MADISON	3580
125-00-00	HQ	PENNSYLVANIA STATE U	3075	127-00-00	ARC	WEST VIRGINIA UNIV	3555
125-00-00	HQ	STANFORD UNIVERSITY	1302	127-00-00	ARC	WORCESTER POLY INST	2408
125-00-00	HQ	STANFORD UNIVERSITY	1303	127-00-00	ERC	BOSTON UNIVERSITY	2208
125-00-00	HQ	UNIV CALIF-BERKELEY	1395	127-00-00	ERC	HARVARD UNIVERSITY	2224
125-00-00	HQ	UNIV OF CONNECTICUT	1699	127-00-00	JSC	PURDUE UNIVERSITY	1989
125-00-00	HQ	UNIV MICH-ANN ARBOR	2482	127-00-00	JSC	UNIV CALIF-DAVIS	1458
125-06-16	LARC	MASS INST OF TECH	2250	127-00-00	LARC	NO CAROLINA STATE U	2902
125-17-14	MSFC	UNIV MICH-ANN ARBOR	2444	127-00-00	LARC	TEXAS TECH UNIV	3274
125-17-17	HQ	UNIV TEXAS-AUSTIN	3335	127-00-00	LARC	UNIV CALIF-SAN DIEGO	1543
125-19-01	LARC	MASS INST OF TECH	2316	127-00-00	LARC	UNIV OF VIRGINIA	3475
125-19-21	LARC	MASS INST OF TECH	2308	127-00-00	LARC	UNIV OF WYOMING	3605
125-19-32	ARC	UNIV CALIF-DAVIS	1460	127-00-00	LARC	VIRGINIA COMNWLTH U	3489
125-22-09	MSFC	SWARTHMORE COLLEGE	3096	127-00-00	LARC	VIRGINIA COMNWLTH U	3490
125-23-10	GSFC	BOSTON COLLEGE	2204	127-00-00	LARC	VIRGINIA COMNWLTH U	3491
125-23-10	GSFC	UNIV MARYLAND-COL PK	2170				

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127-00-00	HQ	INDIANA U-BLOOMINGTN	1979	129-00-00	HQ	UNIV CALIF-SAN DIEGO	1541
127-00-00	HQ	MASS INST OF TECH	2337	129-00-00	HQ	UNIV OF CHICAGO	1920
127-00-00	HQ	UNIV OF DENVER	1684	129-00-00	HQ	UNIV OF DELAWARE	1728
127-00-00	HQ	U OKLA-HEALTH CENTER	3005	129-00-00	HQ	UNIV OF FLORIDA	1798
127-49-02	JSC	MASS INST OF TECH	2291	129-00-00	HQ	UNIV OF FLORIDA	1800
127-49-17	JSC	UNIV OF WASHINGTON	3538	129-00-00	HQ	UNIV OF GEORGIA	1861
127-49-20	JSC	UNIV OF HOUSTON	3293	129-00-00	HQ	UNIV ILLINOIS-URBANA	1957
127-49-22	JSC	CLEMSON UNIV-CLEMSON	3135	129-00-00	HQ	UNIV MICH-ANN ARBOR	2448
127-49-37	ARC	STANFORD UNIVERSITY	1269	129-00-00	HQ	UNIV OF TORONTO	3615
127-53-40	ARC	MASS INST OF TECH	2307	129-01-20	LARC	CALIF INST OF TECH	1222
128-00-00	LARC	PRINCETON UNIVERSITY	2640	129-01-20	HQ	UNIV MARYLAND-COL PK	2178
128-00-00	LERC	PRINCETON UNIVERSITY	2644	129-01-22	LARC	NO CAROLINA STATE U	2907
128-00-00	LERC	UNIV MICH-ANN ARBOR	2452	129-01-22	LARC	OHIO STATE UNIV	2973
128-00-00	MSFC	UNIV OF NOTRE DAME	2016	129-01-22	LARC	OLD DOMINION UNIV	3453
128-00-00	HQ	CALIF INST OF TECH	1196	129-02-21	LARC	COLLEGE OF WM & MARY	3435
128-00-00	HQ	IOWA STATE UNIV	2019	129-02-21	HQ	JOHNS HOPKINS UNIV	2141
128-00-00	HQ	PENNSYLVANIA STATE U	3072	129-02-21	HQ	UNIV OF MAINE-ORONO	2121
128-00-00	HQ	PENNSYLVANIA STATE U	3095	129-02-22	ARC	PURDUE UNIVERSITY	2002
128-00-00	HQ	PURDUE UNIVERSITY	1998	129-02-23	LERC	VIRGINIA POLY INST	3496
128-00-00	HQ	UNIV OF UTAH	3417	129-03-21	LERC	CARNEGIE-MELLON UNIV	3037
128-00-00	HQ	UNIV OF UTAH	3419	129-03-28	LERC	CASE WESTERN RESERVE	2941
128-00-00	HQ	UNIV OF UTAH	3420	129-03-28	LERC	UNIV WISC-MADISON	3564
128-31-63	MSFC	COLORADO STATE UNIV	1630	129-03-29	MSFC	UNIV OF DENVER	1676
129-00-00	ARC	ARIZONA STATE UNIV	1109	129-04-20	HQ	HARVARD UNIVERSITY	2235
129-00-00	ARC	STANFORD UNIVERSITY	1264	129-04-21	ARC	TEXAS CHRISTIAN UNIV	3271
129-00-00	ARC	UNIV CALIF-S CRUZ	1580	129-04-21	HQ	MASS INST OF TECH	2303
129-00-00	GSFC	YALE UNIVERSITY	1714	129-04-21	HQ	UNIV OF CHICAGO	1940
129-00-00	LARC	LEHIGH UNIVERSITY	3054	129-04-21	HQ	UNIV MICH-ANN ARBOR	2462
129-00-00	LARC	UNIV OF FLORIDA	1787	129-04-21	HQ	UNIV WISC-MADISON	3588
129-00-00	LARC	UNIV OF SOUTHERN CAL	1612	130-00-00	JSC	UNIV OF HOUSTON	3289
129-00-00	LARC	VIRGINIA POLY INST	3501	130-00-00	LARC	ST LOUIS UNIVERSITY	2548
129-00-00	LERC	CATHOLIC UNIVERSITY	1739	130-00-00	HQ	NORTHWESTERN UNIV	1906
129-00-00	LERC	STANFORD UNIVERSITY	1304	130-06-01	JSC	UNIV OF HOUSTON	3294
129-00-00	LERC	SYRACUSE UNIVERSITY	2873	130-06-24	ARC	MASS INST OF TECH	2255
129-00-00	LERC	UNIV OF MASS-AMHERST	2404	132-15-01	LERC	CAL STATE U-NRTHRDGE	1248
129-00-00	LERC	VANDERBILT UNIVERSITY	3180	132-15-06	LERC	PURDUE UNIVERSITY	2006
129-00-00	MSFC	GEORGIA INST OF TECH	1828	132-15-06	LERC	STATE U NY-STONY BRK	2865
129-00-00	MSFC	UNIV ALA-TUSCALOOSA	1077	132-80-01	LARC	UNIV OF VIRGINIA	3466
129-00-00	HQ	AMERICAN UNIVERSITY	1733	132-80-01	LARC	YOUNGSTOWN STATE U	2998
129-00-00	HQ	CALIF INST OF TECH	1194	132-80-01	LERC	UNIV ILLINOIS-URBANA	1961
129-00-00	HQ	CATHOLIC UNIVERSITY	1735	132-86-01	LARC	UNIV OF SO CAROLINA	3144
129-00-00	HQ	CITY COLLEGE OF N Y	2712	133-61-10	MSFC	UNIV OF DAYTON	2994
129-00-00	HQ	COLUMBIA UNIVERSITY	2728	133-61-12	LERC	UNIV MICH-ANN ARBOR	2460
129-00-00	HQ	COLUMBIA UNIVERSITY	2730	134-03-20	LARC	VIRGINIA POLY INST	3518
129-00-00	HQ	CORNELL UNIVERSITY	2758	134-03-20	LERC	CASE WESTERN RESERVE	2944
129-00-00	HQ	GEORGIA INST OF TECH	1841	134-03-21	ARC	STANFORD UNIVERSITY	1344
129-00-00	HQ	KENT STATE UNIV	2954	134-03-21	LARC	VIRGINIA POLY INST	3505
129-00-00	HQ	MASS INST OF TECH	2312	134-03-21	LERC	OHIO STATE UNIV	2964
129-00-00	HQ	MASS INST OF TECH	2318	134-03-22	ARC	PRINCETON UNIVERSITY	2626
129-00-00	HQ	MASS INST OF TECH	2347	134-03-23	LARC	VIRGINIA POLY INST	3511
129-00-00	HQ	NEW YORK UNIVERSITY	2811	135-17-02	LARC	DREXEL UNIVERSITY	3046
129-00-00	HQ	NORTHWESTERN UNIV	1904	135-17-02	LARC	OHIO STATE UNIV	2976
129-00-00	HQ	OHIO STATE UNIV	2967	135-19-02	ARC	PRINCETON UNIVERSITY	2669
129-00-00	HQ	SOUTHERN METHODIST U	3235	136-13-01	ARC	UNIV MARYLAND-COL PK	2171
129-00-00	HQ	STANFORD UNIVERSITY	1301	136-13-01	LARC	NEW YORK UNIVERSITY	2818
129-00-00	HQ	STANFORD UNIVERSITY	1313	136-13-01	LARC	UNIV CALIF-SAN DIEGO	1560
129-00-00	HQ	STATE U NY-STONY BRK	2851	136-13-01	LARC	UNIV OF CINCINNATI	2988
129-00-00	HQ	STEVENS INST OF TECH	2680	136-13-01	LARC	WICHITA STATE UNIV	2071
129-00-00	HQ	UNIV CALIF-BERKELEY	1401	136-13-02	HQ	MASS INST OF TECH	2354

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136-13-04	LARC	UNIV OF CINCINNATI	2982	150-22-12	GSFC	TEXAS A&M UNIVERSITY	3242
136-13-04	LARC	VIRGINIA POLY INST	3507	150-22-17	MSFC	GEORGIA INST OF TECH	1832
136-13-05	ARC	IOWA STATE UNIV	2020	150-22-22	GSFC	CAL STATE U-FULLERTN	1242
136-14-02	FRC	STANFORD UNIVERSITY	1319	150-22-22	GSFC	MASS INST OF TECH	2265
136-14-02	LARC	ISRAEL INST OF TECH	3620	150-22-36	GSFC	SYRACUSE UNIVERSITY	2876
136-62-02	FRC	UNIV CALIF-L ANGELES	1496	150-22-38	GSFC	UNIV MARYLAND-COL PK	2189
136-63-02	ARC	UNIV OF SANTA CLARA	1594	160-00-00	GSFC	COLUMBIA UNION COL	2128
136-63-02	ARC	UNIV OF WASHINGTON	3547	160-00-00	GSFC	NEW YORK UNIVERSITY	2809
136-9X-00	ARC	GEORGIA INST OF TECH	1826	160-00-00	GSFC	SOUTHERN METHODIST U	3236
136-9X-00	ARC	MASS INST OF TECH	2254	160-00-00	GSFC	UNIV WISC-MADISON	3568
136-9X-00	ARC	NEW YORK UNIVERSITY	2805	160-00-00	JSC	STANFORD UNIVERSITY	1294
136-9X-00	ARC	OHIO STATE UNIV	2957	160-00-00	JSC	UNIV OF NEVADA-RENO	2598
136-9X-00	ARC	PRINCETON UNIVERSITY	2627	160-00-00	JSC	UNIV TEX-PUB HEALTH	3400
136-9X-00	ARC	UNIV OF WASHINGTON	3549	160-00-00	LARC	UNIV CALIF-RIVERSIDE	1518
136-9X-00	LARC	MICHIGAN STATE UNIV	2419	160-00-00	MSFC	AUBURN UNIV-AUBURN	1011
137-09-01	ARC	UNIV CALIF-DAVIS	1446	160-00-00	HQ	MARQUETTE UNIVERSITY	3560
137-09-01	ARC	UNIV CALIF-SAN FRAN	1569	160-00-00	HQ	NORTHEASTERN UNIV	2385
137-67-02	LARC	GEORGIA INST OF TECH	1850	160-00-00	HQ	PROVIDENCE COLLEGE	3131
139-06-01	ARC	UNIV CALIF-BERKELEY	1373	160-00-00	HQ	UNIV COLORADO-BOLDR	1663
141-00-00	MSFC	UNIV SO MISSISSIPPI	2545	160-00-00	HQ	UNIV OF MUNICH	3629
141-00-00	HQ	JOHNS HOPKINS UNIV	2143	160-00-00	HQ	UNIV TEXAS-AUSTIN	3352
141-00-00	HQ	MASS INST OF TECH	2355	160-00-00	HQ	UNIV WISC-MADISON	3581
141-00-00	HQ	UNIV OF DENVER	1689	160-20-51	GSFC	MASS INST OF TECH	2268
141-00-00	HQ	UNIV OF MIAMI	1816	160-20-51	GSFC	UNIV MO-ROLLA	2571
141-00-00	HQ	UNIV OF PITTSBURGH	3119	160-20-51	JSC	MASS INST OF TECH	2286
141-00-00	HQ	UNIV OF PITTSBURGH	3120	160-20-53	GSFC	NEW YORK UNIVERSITY	2806
141-00-00	HQ	UNIV OF SOUTHERN CAL	1605	160-20-54	LARC	HOFSTRA UNIVERSITY	2796
141-00-00	HQ	WAYNE STATE UNIV	2489	160-20-54	LARC	WEST VIRGINIA UNIV	3557
141-92-00	MSFC	MASS INST OF TECH	2270	160-20-56	LARC	OREGON STATE UNIV	3019
141-93-00	ARC	STANFORD UNIVERSITY	1357	160-20-56	LARC	UNIV MICH-ANN ARBOR	2464
141-93-00	ARC	UNIV MO-KANSAS CITY	2564	160-20-56	LARC	UNIV NEW BRUNSWICK	3614
141-93-00	GSFC	JOHNS HOPKINS UNIV	2130	160-20-58	HQ	UNIV MO-KANSAS CITY	2565
141-93-00	LARC	UNIV OF WYOMING	3610	160-20-58	HQ	UNIV OF RHODE ISLAND	3133
141-93-00	HQ	GEORGE WASHINGTON U	1750	160-20-59	GSFC	PURDUE UNIVERSITY	2004
141-93-00	HQ	INDIANA U-BLOOMINGTN	1976	160-20-59	GSFC	UNIV MARYLAND-COL PK	2188
141-93-00	HQ	SOUTHEASTN STATE COL	3003	160-44-51	GSFC	COLORADO STATE UNIV	1640
141-93-00	HQ	STANFORD UNIVERSITY	1297	160-44-51	GSFC	COLORADO STATE UNIV	1641
141-93-00	HQ	UNIV OF NEW MEXICO	2697	160-44-51	GSFC	UNIV OF CHICAGO	1928
141-93-00	HQ	UNIV OF PITTSBURGH	3104	160-44-51	GSFC	UNIV WISC-MADISON	3570
141-93-01	HQ	INDIANA U-BLOOMINGTN	1977	160-44-51	GSFC	UNIV WISC-MADISON	3573
141-93-01	HQ	SOUTHEASTN STATE COL	3004	160-44-52	GSFC	UNIV CALIF-L ANGELES	1509
141-93-01	HQ	UNIV OF CONNECTICUT	1697	160-44-52	GSFC	VIRGINIA POLY INST	3513
141-93-01	HQ	UNIV OF CONNECTICUT	1698	160-44-53	GSFC	UNIV ALASKA-FAIRBNKS	1094
141-93-01	HQ	UNIV OF GEORGIA	1860	160-44-53	GSFC	UNIV OF ARIZONA	1121
141-93-01	HQ	UNIV OF NEW MEXICO	2698	160-44-54	GSFC	MASS INST OF TECH	2343
141-93-01	HQ	UNIV OF SOUTHERN CAL	1606	160-44-54	GSFC	UNIV OF ARIZONA	1149
141-93-02	JSC	UNIV ILLINOIS-URBANA	1952	160-44-54	GSFC	UNIV MICH-ANN ARBOR	2483
141-93-02	JSC	UNIV MO-KANSAS CITY	2566	160-44-55	GSFC	UNIV OF CHICAGO	1937
141-93-02	LARC	WEST VIRGINIA UNIV	3558	160-44-55	GSFC	UNIV OF OSLO	3625
141-93-02	WS	COLLEGE OF WM & MARY	3437	160-44-55	GSFC	UNIV OF WASHINGTON	3541
141-93-02	HQ	GEORGE WASHINGTON U	1751	160-44-58	MSFC	UNIV OF SO ALABAMA	1092
141-93-02	HQ	UNIV OF CHICAGO	1929	160-44-60	ARC	TEXAS A&M UNIVERSITY	3268
141-94-00	HQ	UNIV OF DENVER	1678	160-44-63	LARC	NO CAROLINA STATE U	2913
141-94-00	HQ	UNIV OF DENVER	1679	160-44-64	LARC	UNIV OF DENVER	1687
150-00-00	GSFC	UNIV MARYLAND-COL PK	2163	160-44-64	LARC	UNIV MICH-ANN ARBOR	2471
150-22-03	MSFC	AUBURN UNIV-AUBURN	1010	160-44-64	LARC	FAIRFIELD UNIVERSITY	1690
150-22-03	MSFC	UNIV ALA-TUSCALOOSA	1078	160-44-67	GSFC	TEXAS A&M UNIVERSITY	3246
150-22-04	MSFC	UNIV OF SO CAROLINA	3141	160-44-69	MSFC	CAL STATE U-SAN JOSE	1256
150-22-11	GSFC	UNIV MO-ROLLA	2567	160-44-79	ARC	COLORADO STATE UNIV	1624
				160-44-9X	LARC		

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160-44-9X	LARC	DREXEL UNIVERSITY	3044	180-06-50	GSFC	STANFORD UNIVERSITY	1352
160-75-01	WS	VIRGINIA POLY INST	3498	180-17-52	MSFC	MASS INST OF TECH	2306
160-75-01	HQ	UNIV OF MONTANA	2588	180-17-53	MSFC	UNIV TENNESSEE-KNOXV	3159
160-75-07	MSFC	GEORGIA INST OF TECH	1837	180-72-50	LARC	UNIV MICH-ANN ARBOR	2479
160-75-10	JSC	UNIV OF KANSAS	2051	181-00-00	HQ	ARIZONA STATE UNIV	1112
160-75-10	MSFC	UNIV ALA-TUSCALOOSA	1085	181-00-00	HQ	AUBURN UNIV-AUBURN	1026
160-75-10	MSFC	UNIV ALA-TUSCALOOSA	1086	181-00-00	HQ	AUBURN UNIV-AUBURN	1028
160-75-13	JSC	AUSTIN STATE UNIV	3187	181-00-00	HQ	BOSTON COLLEGE	2207
160-75-22	ARC	CAL STATE U-SAN JOSE	1255	181-00-00	HQ	CALIF INST OF TECH	1237
160-75-22	ARC	UNIV CALIF-DAVIS	1451	181-00-00	HQ	CARNEGIE-MELLON UNIV	3043
160-75-27	WS	STATE UNIV NY-BUFFAL	2843	181-00-00	HQ	CASE WESTERN RESERVE	2947
160-75-31	JSC	PURDUE UNIVERSITY	1994	181-00-00	HQ	COLORADO STATE UNIV	1648
160-75-55	JSC	AUSTIN STATE UNIV	3186	181-00-00	HQ	COLUMBIA UNIVERSITY	2742
160-75-55	JSC	UNIV OF HOUSTON	3295	181-00-00	HQ	DARTMOUTH COLLEGE	2608
160-75-55	JSC	UNIV TEXAS-AUSTIN	3329	181-00-00	HQ	DUKE UNIVERSITY	2889
160-75-55	JSC	UNIV TEXAS-AUSTIN	3330	181-00-00	HQ	EMORY UNIVERSITY	1824
160-75-56	JSC	COLORADO STATE UNIV	1634	181-00-00	HQ	FLORIDA STATE UNIV	1784
160-75-56	JSC	COLORADO STATE UNIV	1635	181-00-00	HQ	FORDHAM UNIVERSITY	2793
160-75-61	MSFC	UNIV OKLAHOMA-NORMAN	3007	181-00-00	HQ	GEORGIA INST OF TECH	1855
160-75-75	JSC	UNIV TEX-PUB HEALTH	3402	181-00-00	HQ	GEORGIA INST OF TECH	1856
160-75-75	JSC	UNIV TEX-PUB HEALTH	3403	181-00-00	HQ	HARVARD UNIVERSITY	2244
160-75-75	JSC	UNIV TEX-PUB HEALTH	3405	181-00-00	HQ	HOWARD UNIVERSITY	1775
160-75-75	JSC	UNIV TEX-PUB HEALTH	3407	181-00-00	HQ	ILL INST OF TECH	1888
160-75-75	JSC	UNIV OF WEST FLORIDA	1819	181-00-00	HQ	IOWA STATE UNIV	2023
160-75-77	WS	UNIV OF KANSAS	2050	181-00-00	HQ	JOHNS HOPKINS UNIV	2142
160-75-77	WS	UNIV MICH-ANN ARBOR	2441	181-00-00	HQ	LEHIGH UNIVERSITY	3062
160-75-79	ARC	UNIV CALIF-RIVERSIDE	1522	181-00-00	HQ	MICHIGAN STATE UNIV	2421
160-75-80	HQ	COLORADO SCH OF MINE	1623	181-00-00	HQ	MISSISSIPPI STATE U	2543
160-75-81	ARC	COLORADO STATE UNIV	1625	181-00-00	HQ	NEW YORK UNIVERSITY	2822
160-75-81	ARC	UNIV OF WASHINGTON	3529	181-00-00	HQ	NO CAROLINA STATE U	2917
160-75-85	JSC	MISSISSIPPI STATE U	2537	181-00-00	HQ	NO DAKOTA STATE UNIV	2926
160-75-85	JSC	TULANE UNIVERSITY	2113	181-00-00	HQ	NORTHEASTERN UNIV	2388
160-75-90	ARC	UNIV CALIF-BERKELEY	1372	181-00-00	HQ	NORTHWESTERN UNIV	1903
160-75-98	GSFC	UNIV MARYLAND-COL PK	2195	181-00-00	HQ	OHIO STATE UNIV	2979
160-75-98	JSC	RICE UNIVERSITY	3218	181-00-00	HQ	OREGON STATE UNIV	3020
160-75-98	JSC	UNIV OF HOUSTON	3298	181-00-00	HQ	PENNSYLVANIA STATE U	3093
160-75-98	JSC	UNIV TEXAS-DALLAS	3372	181-00-00	HQ	PENNSYLVANIA STATE U	3094
160-75-98	MSFC	UNIV ALA-HUNTSVILLE	1071	181-00-00	HQ	POLY INST BROOKLYN	2828
160-79-90	ARC	UNIV CALIF-BERKELEY	1374	181-00-00	HQ	PRINCETON UNIVERSITY	2671
160-88-50	HQ	UNIV MICH-ANN ARBOR	2484	181-00-00	HQ	PURDUE UNIVERSITY	2010
161-79-51	GSFC	COLUMBIA UNIVERSITY	2736	181-00-00	HQ	PURDUE UNIVERSITY	2011
161-79-51	GSFC	UNIV MARYLAND-COL PK	2193	181-00-00	HQ	RENSSELAER POLY-NY	2840
164-00-00	GSFC	UNIV CALIF-L ANGELES	1472	181-00-00	HQ	RICE UNIVERSITY	3231
164-00-00	HQ	MASS INST OF TECH	2302	181-00-00	HQ	RUTGERS U-N BRUNSWK	2677
164-06-58	GSFC	UNIV CALIF-BERKELEY	1438	181-00-00	HQ	ST LOUIS UNIVERSITY	2551
164-06-9X	MSFC	STANFORD UNIVERSITY	1360	181-00-00	HQ	SOUTHERN METHODIST U	3239
164-18-54	GSFC	UNIV OF NOTRE DAME	2017	181-00-00	HQ	STANFORD UNIVERSITY	1365
164-21-52	LERC	STANFORD UNIVERSITY	1279	181-00-00	HQ	STANFORD UNIVERSITY	1366
164-21-54	GSFC	VIRGINIA POLY INST	3515	181-00-00	HQ	STANFORD UNIVERSITY	1367
164-21-54	GSFC	VIRGINIA POLY INST	3516	181-00-00	HQ	STANFORD UNIVERSITY	1368
164-21-57	GSFC	UNIV MARYLAND-COL PK	2166	181-00-00	HQ	SYRACUSE UNIVERSITY	2877
164-21-72	GSFC	OHIO STATE UNIV	2970	181-00-00	HQ	SYRACUSE UNIVERSITY	2878
164-21-72	GSFC	VIRGINIA POLY INST	3509	181-00-00	HQ	TEXAS TECH UNIV	3279
164-21-80	GSFC	UNIV MARYLAND-COL PK	2186	181-00-00	HQ	TULANE UNIVERSITY	2118
180-00-00	LARC	NO CAROLINA STATE U	2906	181-00-00	HQ	UNIV ALA-TUSCALOOSA	1089
180-00-00	MSFC	AUBURN UNIV-AUBURN	1017	181-00-00	HQ	UNIV ALASKA-FAIRBNKS	1108
180-06-50	GSFC	MASS INST OF TECH	2267	181-00-00	HQ	UNIV OF ARIZONA	1171
180-06-50	GSFC	MASS INST OF TECH	2335	181-00-00	HQ	UNIV CALIF-BERKELEY	1442
180-06-50	GSFC	PRINCETON UNIVERSITY	2651	181-00-00	HQ	UNIV CALIF-L ANGELES	1517

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181-00-00	HQ	UNIV CALIF-SAN DIEGO	1568	183-00-00	HQ	UNIV MARYLAND-COL PK	2151
181-00-00	HQ	UNIV OF CHICAGO	1947	183-00-00	HQ	UNIV OF MIAMI	1807
181-00-00	HQ	UNIV OF CINCINNATI	2993	183-00-00	HQ	UNIV OF MIAMI	1811
181-00-00	HQ	UNIV OF DELAWARE	1730	183-00-00	HQ	UNIV OF MIAMI	1813
181-00-00	HQ	UNIV OF DENVER	1688	183-00-00	HQ	UNIV N CAR-CHPL HILL	2920
181-00-00	HQ	UNIV OF HAWAII	1879	183-00-00	HQ	UNIV OF PENNSYLVANIA	3100
181-00-00	HQ	UNIV ILLINOIS-URBANA	1972	183-00-00	HQ	UNIV OF PITTSBURGH	3108
181-00-00	HQ	UNIV OF IOWA	2046	183-00-00	HQ	UNIV OF SOUTHERN CAL	1608
181-00-00	HQ	UNIV OF KANSAS	2068	183-00-00	HQ	UNIV TENNESSEE-KNOXV	3166
181-00-00	HQ	UNIV OF KANSAS	2069	183-00-00	HQ	UNIV TEXAS-DALLAS	3373
181-00-00	HQ	UNIV MARYLAND-COL PK	2197	183-00-00	HQ	UNIV OF VIRGINIA	3470
181-00-00	HQ	UNIV OF MIAMI	1815	183-00-00	HQ	UNIV WISC-MADISON	3577
181-00-00	HQ	UNIV MICH-ANN ARBOR	2481	183-00-00	HQ	VIRGINIA POLY INST	3502
181-00-00	HQ	U MINN-MNPLS-ST PAUL	2524	183-00-00	HQ	WEST VIRGINIA UNIV	3554
181-00-00	HQ	U MINN-MNPLS-ST PAUL	2525	183-00-00	HQ	YALE UNIVERSITY	1712
181-00-00	HQ	UNIV OF NEVADA-RENO	2600	185-00-00	GSFC	UNIV NEBRASKA-LINCLN	2590
181-00-00	HQ	UNIV OF NEW MEXICO	2706	185-00-00	HQ	MASS INST OF TECH	2314
181-00-00	HQ	UNIV N CAR-CHPL HILL	2923	185-00-00	HQ	NORTHWESTERN UNIV	1891
181-00-00	HQ	UNIV OF NOTRE DAME	2018	185-00-00	HQ	PENNSYLVANIA STATE U	3073
181-00-00	HQ	UNIV OF PITTSBURGH	3118	185-00-00	HQ	PRINCETON UNIVERSITY	2637
181-00-00	HQ	UNIV OF SOUTHERN CAL	1617	185-00-00	HQ	STANFORD UNIVERSITY	1308
181-00-00	HQ	UNIV OF SOUTHERN CAL	1618	185-00-00	HQ	STANFORD UNIVERSITY	1325
181-00-00	HQ	UNIV TENNESSEE-KNOXV	3179	185-00-00	HQ	UNIV OF ARIZONA	1136
181-00-00	HQ	UNIV TEXAS-AUSTIN	3351	185-00-00	HQ	UNIV CALIF-SAN DIEGO	1549
181-00-00	HQ	UNIV OF VERMONT	3428	185-00-00	HQ	UNIV OF CHICAGO	1931
181-00-00	HQ	UNIV OF VIRGINIA	3487	185-00-00	HQ	UNIV OF FLORIDA	1796
181-00-00	HQ	UNIV OF WASHINGTON	3553	185-00-00	HQ	UNIV OF HAWAII	1880
181-00-00	HQ	WASHINGTON UNIVERSTY	2583	185-00-00	HQ	UNIV OF SOUTHERN CAL	1611
181-00-00	HQ	WAYNE STATE UNIV	2488	185-00-00	HQ	UNIV TEXAS-AUSTIN	3333
183-00-00	HQ	ALABAMA A&M UNIV	1000	185-00-00	HQ	UNIV OF WASHINGTON	3537
183-00-00	HQ	CORNELL UNIVERSITY	2765	185-00-00	HQ	YALE UNIVERSITY	1711
183-00-00	HQ	DREXEL UNIVERSITY	3045	185-47-32	JSC	RICE UNIVERSITY	3228
183-00-00	HQ	GEORGE WASHINGTON U	1753	185-47-32	JSC	RICE UNIVERSITY	3229
183-00-00	HQ	GEORGIA INST OF TECH	1845	185-47-32	JSC	UNIV TEXAS-AUSTIN	3328
183-00-00	HQ	LA STATE U-BAT ROUGE	2094	185-47-55	GSFC	HOWARD UNIVERSITY	1770
183-00-00	HQ	MASS INST OF TECH	2315	185-47-67	ARC	UNIV OF WASHINGTON	3552
183-00-00	HQ	MISSISSIPPI STATE U	2539	185-47-80	HQ	STANFORD UNIVERSITY	1300
183-00-00	HQ	NORTHWESTERN UNIV	1893	185-47-80	HQ	UNIV OF ARIZONA	1141
183-00-00	HQ	NORTHWESTERN UNIV	1894	185-47-80	HQ	U MINN-MNPLS-ST PAUL	2508
183-00-00	HQ	PENNSYLVANIA STATE U	3074	185-47-80	HQ	UNIV WISC-MADISON	3587
183-00-00	HQ	PRAIRIE VIEW A&M COL	3207	185-47-81	HQ	CORNELL UNIVERSITY	2761
183-00-00	HQ	PURDUE UNIVERSITY	1999	185-47-81	HQ	CORNELL UNIVERSITY	2763
183-00-00	HQ	RICE UNIVERSITY	3222	185-47-81	HQ	CORNELL UNIVERSITY	2773
183-00-00	HQ	SO DAKOTA SCHL MINES	3147	185-47-81	HQ	GEORGIA INST OF TECH	1840
183-00-00	HQ	SOUTHERN METHODIST U	3233	185-47-81	HQ	HARVARD UNIVERSITY	2229
183-00-00	HQ	STATE U NY-STONY BRK	2852	185-47-81	HQ	HARVARD UNIVERSITY	2242
183-00-00	HQ	SYRACUSE UNIVERSITY	2872	185-47-81	HQ	MASS INST OF TECH	2327
183-00-00	HQ	TALLADEGA COLLEGE	1029	185-47-81	HQ	POLY INST BROOKLYN	2826
183-00-00	HQ	TUSKEGEE INSTITUTE	1031	185-47-81	HQ	TEXAS A&M UNIVERSITY	3267
183-00-00	HQ	UNIV ALA-TUSCALOOSA	1088	185-47-81	HQ	UNIV MICH-ANN ARBOR	2454
183-00-00	HQ	UNIV CALIF-BERKELEY	1394	185-47-81	HQ	UNIV OF SOUTHERN CAL	1613
183-00-00	HQ	UNIV CALIF-L ANGELES	1482	185-47-81	HQ	UNIV TEXAS-DALLAS	3374
183-00-00	HQ	UNIV OF CINCINNATI	2984	185-47-81	HQ	UNIV WISC-MADISON	3594
183-00-00	HQ	UNIV OF DENVER	1680	185-47-82	HQ	RENSSELAER POLY-NY	2833
183-00-00	HQ	UNIV OF DENVER	1681	185-47-82	HQ	VIRGINIA POLY INST	3503
183-00-00	HQ	UNIV OF FLORIDA	1795	185-47-83	HQ	KANSAS STATE UNIV	2047
183-00-00	HQ	UNIV OF HOUSTON	3305	185-47-83	HQ	STATE U NY-STONY BRK	2859
183-00-00	HQ	UNIV OF KANSAS	2057	185-47-83	HQ	UNIV CALIF-BERKELEY	1402
183-00-00	HQ	UNIV OF KANSAS	2060	185-47-83	HQ	UNIV COLORADO-BOLDR	1656

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185-47-83	HQ	UNIV OF SOUTHERN CAL	1614	188-00-00	GSFC	NORTHEASTERN UNIV	2389
185-47-83	HQ	UNIV TENNESSEE-KNOXV	3165	188-00-00	GSFC	UNIV CALIF-BERKELEY	1399
185-47-84	HQ	UNIV NEBRASKA-LINCLN	2595	188-00-00	GSFC	UNIV CALIF-DAVIS	1457
185-47-84	HQ	UNIV OF PITTSBURGH	3105	188-00-00	GSFC	UNIV CALIF-L ANGELES	1487
185-47-84	HQ	UNIV OF PITTSBURGH	3106	188-00-00	GSFC	UNIV CALIF-S BARBARA	1575
185-47-84	HQ	UNIV OF PITTSBURGH	3112	188-00-00	GSFC	UNIV MARYLAND-COL PK	2152
185-47-84	HQ	UNIV OF SO CAROLINA	3143	188-00-00	JSC	UNIV TEXAS-AUSTIN	3327
185-47-84	HQ	YALE UNIVERSITY	1708	188-00-00	MSFC	COLUMBIA UNIVERSITY	2720
185-50-01	HQ	CALIF INST OF TECH	1232	188-00-00	MSFC	MASS INST OF TECH	2272
185-50-81	HQ	BROWN UNIVERSITY	3128	188-00-00	MSFC	STANFORD UNIVERSITY	1290
185-50-81	HQ	CALIF INST OF TECH	1212	188-00-00	MSFC	UNIV OF ARIZONA	1129
185-50-81	HQ	CALIF INST OF TECH	1215	188-00-00	HQ	CALIF INST OF TECH	1197
185-50-81	HQ	CALIF INST OF TECH	1226	188-00-00	HQ	HAVERFORD COLLEGE	3049
185-50-81	HQ	CALIF INST OF TECH	1236	188-00-00	HQ	NEW MEX ST U-LAS CR	2691
185-50-81	HQ	MASS INST OF TECH	2359	188-00-00	HQ	NO CAROLINA STATE U	2901
185-50-81	HQ	STANFORD UNIVERSITY	1359	188-00-00	HQ	NORTHWESTERN UNIV	1905
185-50-81	HQ	STATE UNIV NY-BUFFAL	2846	188-00-00	HQ	PRINCETON UNIVERSITY	2649
185-50-81	HQ	UNIV CALIF-BERKELEY	1410	188-00-00	HQ	PRINCETON UNIVERSITY	2672
185-50-81	HQ	UNIV MICH-ANN ARBOR	2478	188-00-00	HQ	STANFORD UNIVERSITY	1324
186-00-00	HQ	CORNELL UNIVERSITY	2781	188-00-00	HQ	STANFORD UNIVERSITY	1327
186-68-51	ARC	PURDUE UNIVERSITY	1984	188-00-00	HQ	UNIV CALIF-BERKELEY	1400
186-68-52	HQ	MASS INST OF TECH	2357	188-00-00	HQ	UNIV CALIF-L ANGELES	1486
186-68-52	HQ	STANFORD UNIVERSITY	1340	188-00-00	HQ	UNIV CALIF-SAN DIEGO	1535
186-68-52	HQ	STANFORD UNIVERSITY	1341	188-00-00	HQ	UNIV CALIF-S CRUZ	1581
186-68-52	HQ	STATE U NY-STONY BRK	2862	188-00-00	HQ	UNIV OF CHICAGO	1923
186-68-52	HQ	UNIV CALIF-SAN DIEGO	1559	188-00-00	HQ	UNIV OF FLORIDA	1799
186-68-55	HQ	CORNELL UNIVERSITY	2753	188-00-00	HQ	UNIV ILLINOIS-URBANA	1956
186-68-55	HQ	CORNELL UNIVERSITY	2754	188-00-00	HQ	UNIV MICH-ANN ARBOR	2451
186-68-55	HQ	RENSSELAER POLY-NY	2835	188-00-00	HQ	UNIV OF ROCHESTER	2880
186-68-58	HQ	CALIF INST OF TECH	1224	188-00-00	HQ	UNIV TEXAS-DALLAS	3384
186-68-60	ARC	RENSSELAER POLY-NY	2839	188-00-00	HQ	UNIV WISC-MADISON	3578
186-68-60	ARC	STANFORD UNIVERSITY	1274	188-00-00	HQ	UPPSALA UNIVERSITY	3627
186-68-60	GSFC	SOUTHEASTN MASS UNIV	2390	188-00-00	HQ	WASHINGTON UNIVERSITY	2579
186-68-63	ARC	MASS INST OF TECH	2259	188-36-53	HQ	UNIV MARYLAND-COL PK	2180
186-68-63	HQ	HARVARD UNIVERSITY	2241	188-36-55	GSFC	UNIV MARYLAND-COL PK	2175
186-68-63	HQ	MASS INST OF TECH	2363	188-36-55	HQ	JOHNS HOPKINS UNIV	2140
186-68-63	HQ	MASS INST OF TECH	2364	188-36-55	HQ	POLY INST BROOKLYN	2824
186-68-63	HQ	UNIV CALIF-L ANGELES	1515	188-36-55	HQ	RICE UNIVERSITY	3221
186-68-63	HQ	UNIV MICH-ANN ARBOR	2474	188-36-55	HQ	UNIV OF ARIZONA	1147
186-68-63	HQ	UNIV WISC-MADISON	3596	188-36-55	HQ	UNIV CALIF-BERKELEY	1396
186-68-64	MSFC	AUBURN UNIV-AUBURN	1018	188-36-55	HQ	UNIV CALIF-L ANGELES	1483
186-68-64	MSFC	AUBURN UNIV-AUBURN	1019	188-36-55	HQ	UNIV CALIF-L ANGELES	1488
186-68-64	MSFC	AUBURN UNIV-AUBURN	1020	188-36-55	HQ	UNIV CALIF-SAN DIEGO	1537
186-68-64	MSFC	AUBURN UNIV-AUBURN	1022	188-36-55	HQ	UNIV CALIF-SAN DIEGO	1553
186-68-64	MSFC	UNIV TENNESSEE-KNOXV	3161	188-36-55	HQ	UNIV CALIF-SAN DIEGO	1561
186-68-68	ARC	CALIF INST OF TECH	1180	188-36-55	HQ	UNIV OF IOWA	2041
186-68-68	ARC	UNIV WISC-MADISON	3562	188-36-55	HQ	UNIV MARYLAND-COL PK	2150
186-68-68	HQ	CALIF INST OF TECH	1223	188-36-55	HQ	U MINN-MNPLS-ST PAUL	2507
186-68-68	HQ	DREXEL UNIVERSITY	3048	188-36-55	HQ	UNIV WISC-MADISON	3589
186-68-68	HQ	JOHNS HOPKINS UNIV	2137	188-36-56	GSFC	UNIV MARYLAND-COL PK	2162
186-68-68	HQ	UNIV OF ARIZONA	1162	188-36-56	LARC	OLD DOMINION UNIV	3462
186-68-68	HQ	UNIV CALIF-BERKELEY	1425	188-36-56	MSFC	UNIV ALA-HUNTSVILLE	1068
186-68-68	HQ	UNIV CALIF-L ANGELES	1507	188-36-56	MSFC	UNIV MICH-ANN ARBOR	2446
186-68-68	HQ	UNIV CALIF-L ANGELES	1508	188-36-56	HQ	PENNSYLVANIA STATE U	3070
186-68-68	HQ	UNIV OF CHICAGO	1939	188-36-56	HQ	PENNSYLVANIA STATE U	3071
186-68-68	HQ	UNIV COLORADO-BOLDR	1668	188-36-56	HQ	UNIV CALIF-SAN DIEGO	1551
186-68-68	HQ	UNIV COLORADO-BOLDR	1669	188-36-56	HQ	UNIV CALIF-SAN DIEGO	1552
186-68-68	HQ	UNIV WISC-MADISON	3591	188-36-56	HQ	UNIV OF IOWA	2042
188-00-00	GSFC	COL OF HOLY CROSS	2216	188-36-56	HQ	UNIV MICH-ANN ARBOR	2453

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188-36-56	HQ	UNIV MICH-ANN ARBOR	2458	188-41-54	HQ	MONTANA STATE UNIV	2586
188-36-56	HQ	UNIV TEXAS-DALLAS	3376	188-41-54	HQ	UNIV MARYLAND-BALT	2145
188-36-56	HQ	YALE UNIVERSITY	1716	188-41-55	ARC	UNIV OF ARIZONA	1115
188-36-57	HQ	STANFORD UNIVERSITY	1306	188-41-55	HQ	BOSTON UNIVERSITY	2214
188-38-51	GSFC	NEW YORK INST TECH	2801	188-41-55	HQ	CALIF INST OF TECH	1208
188-38-51	GSFC	UNIV MARYLAND-COL PK	2156	188-41-55	HQ	MASS INST OF TECH	2346
188-38-51	HQ	CALIF INST OF TECH	1214	188-41-55	HQ	STANFORD UNIVERSITY	1336
188-38-51	HQ	STATE U NY-STONY BRK	2857	188-41-55	HQ	ST U NY COL-GENESCO	2870
188-38-52	GSFC	UNIV OF DENVER	1675	188-41-55	HQ	UNIV OF ARIZONA	1159
188-38-52	GSFC	UNIV OF HAWAII	1866	188-41-55	HQ	UNIV CALIF-BERKELEY	1413
188-38-52	HQ	CALIF INST OF TECH	1198	188-41-55	HQ	UNIV CALIF-SAN DIEGO	1548
188-38-52	HQ	STANFORD UNIVERSITY	1345	188-41-55	HQ	UNIV CALIF-S CRUZ	1583
188-38-52	HQ	UNIV OF HAWAII	1870	188-41-55	HQ	WASHINGTON UNIVERSTY	2582
188-38-52	HQ	UNIV MARYLAND-COL PK	2164	188-41-57	HQ	FEDERAL CITY COLLEGE	1747
188-38-52	HQ	UNIV OF MASS-AMHERST	2398	188-41-57	HQ	JOHNS HOPKINS UNIV	2136
188-38-52	HQ	UNIV OF MASS-AMHERST	2401	188-41-58	HQ	UNIV TEXAS-AUSTIN	3353
188-38-52	HQ	UNIV MICH-ANN ARBOR	2473	188-41-59	GSFC	BOWIE STATE COLLEGE	2124
188-38-52	HQ	UNIV NEW HAMPSHIRE	2613	188-41-59	HQ	COLUMBIA UNIVERSITY	2733
188-38-52	HQ	UNIV NEBRASKA-LINCLN	2591	188-41-59	HQ	COLUMBIA UNIVERSITY	2737
188-38-53	GSFC	UNIV NEW HAMPSHIRE	2612	188-41-59	HQ	MASS INST OF TECH	2313
188-38-53	LARC	OLD DOMINION UNIV	3445	188-41-59	HQ	UNIV CALIF-BERKELEY	1424
188-38-53	HQ	HARVARD UNIVERSITY	2222	188-41-60	MSFC	PRINCETON UNIVERSITY	2634
188-38-53	HQ	HARVARD UNIVERSITY	2228	188-41-60	MSFC	PRINCETON UNIVERSITY	2636
188-38-53	HQ	NEW YORK INST TECH	2802	188-45-01	HQ	UNIV CALIF-BERKELEY	1411
188-38-53	HQ	STANFORD UNIVERSITY	1312	188-45-51	HQ	DUDLEY OBSERVATORY	2789
188-38-53	HQ	STANFORD UNIVERSITY	1337	188-45-51	HQ	DUDLEY OBSERVATORY	2791
188-38-53	HQ	UNIV CALIF-BERKELEY	1434	188-45-51	HQ	MASS INST OF TECH	2351
188-38-53	HQ	UNIV MARYLAND-COL PK	2159	188-45-51	HQ	UNIV OF ARIZONA	1142
188-38-53	HQ	UNIV OF ROCHESTER	2882	188-45-51	HQ	UNIV CALIF-SAN DIEGO	1555
188-38-53	HQ	UNIV TENNESSEE-KNOXV	3172	188-45-51	HQ	UNIV MARYLAND-COL PK	2157
188-38-53	HQ	UNIV TEXAS-AUSTIN	3344	188-45-51	HQ	UNIV OF NEW MEXICO	2705
188-41-51	ARC	UNIV OF WASHINGTON	3546	188-45-52	HQ	UNIV MARYLAND-COL PK	2168
188-41-51	GSFC	UNIV OF ARIZONA	1119	188-45-52	HQ	UNIV MICH-ANN ARBOR	2472
188-41-51	JSC	LA STATE U-SHREVEPT	2104	188-45-53	HQ	CAL STATE U-FULLERTN	1241
188-41-51	MSFC	CASE WESTERN RESERVE	2928	188-45-53	HQ	RENSSELAER POLY-NY	2834
188-41-51	HQ	CALIF INST OF TECH	1202	188-45-53	HQ	UNIV OF WASHINGTON	3536
188-41-51	HQ	NORTHWESTERN UNIV	1892	188-46-51	HQ	CALIF INST OF TECH	1218
188-41-51	HQ	PRINCETON UNIVERSITY	2639	188-46-51	HQ	UNIV CALIF-RIVERSIDE	1521
188-41-51	HQ	PRINCETON UNIVERSITY	2647	188-46-51	HQ	UNIV OF CHICAGO	1917
188-41-51	HQ	PURDUE UNIVERSITY	1992	188-46-51	HQ	UNIV OF CHICAGO	1918
188-41-51	HQ	UNIV OF ARIZONA	1140	188-46-51	HQ	UNIV MARYLAND-COL PK	2160
188-41-51	HQ	UNIV CALIF-SAN DIEGO	1536	188-46-51	HQ	UNIV MARYLAND-COL PK	2169
188-41-51	HQ	UNIV CALIF-S CRUZ	1582	188-46-51	HQ	UNIV NEW HAMPSHIRE	2615
188-41-51	HQ	UNIV OF CHICAGO	1930	188-46-51	HQ	WASHINGTON UNIVERSTY	2581
188-41-51	HQ	UNIV OF HAWAII	1878	188-46-52	GSFC	FEDERAL CITY COLLEGE	1744
188-41-51	HQ	UNIV MARYLAND-COL PK	2161	188-46-52	HQ	LA STATE U-BAT ROUGE	2099
188-41-51	HQ	UNIV MARYLAND-COL PK	2177	188-46-52	HQ	STANFORD UNIVERSITY	1333
188-41-51	HQ	U MINN-MNPLS-ST PAUL	2527	188-46-52	HQ	UNIV OF ARIZONA	1146
188-41-51	HQ	UNIV OF PITTSBURGH	3115	188-46-52	HQ	UNIV CALIF-BERKELEY	1439
188-41-51	HQ	UNIV OF VIRGINIA	3472	188-46-52	HQ	UNIV OF WYOMING	3608
188-41-51	HQ	UNIV OF VIRGINIA	3479	188-46-54	GSFC	CATHOLIC UNIVERSITY	1740
188-41-53	HQ	INDIANA U-BLOOMINGTN	1978	188-46-54	GSFC	UNIV OF VIRGINIA	3468
188-41-54	MSFC	MONTANA STATE UNIV	2585	188-46-54	HQ	CORNELL UNIVERSITY	2771
188-41-54	MSFC	STANFORD UNIVERSITY	1291	188-46-54	HQ	U MINN-MNPLS-ST PAUL	2513
188-41-54	MSFC	STANFORD UNIVERSITY	1323	188-46-54	HQ	UNIV NEW HAMPSHIRE	2614
188-41-54	MSFC	UNIV ALA-HUNTSVILLE	1063	188-48-51	MSFC	UNIV OF MONTEVALLO	1091
188-41-54	MSFC	UNIV ALA-HUNTSVILLE	1064	188-48-52	GSFC	UNIV CALIF-RIVERSIDE	1520
188-41-54	MSFC	UNIV ALA-TUSCALOOSA	1084	188-48-52	GSFC	UNIV OF PITTSBURGH	3107
188-41-54	HQ	CALIF INST OF TECH	1227	188-78-51	GSFC	UNIV MICH-ANN ARBOR	2440

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RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.	RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.
188-78-53	MSFC	MASS INST OF TECH	2274	189-55-65	ARC	STANFORD UNIVERSITY	1342
188-78-53	MSFC	STANFORD UNIVERSITY	1292	189-57-62	WS	STATE UNIV NY-BUFFAL	2847
188-78-53	MSFC	WASHINGTON UNIVERSTY	2575	189-57-62	HQ	UNIV MARYLAND-BALT	2146
188-78-56	HQ	PRINCETON UNIVERSITY	2661	189-73-62	ARC	TEXAS WOMANS UNIV	3280
188-78-57	MSFC	UNIV OF ARIZONA	1132	192-55-61	HQ	CAL STATE U-FULLERTN	1243
188-78-57	HQ	PRINCETON UNIVERSITY	2673	192-55-61	HQ	CORNELL UNIVERSITY	2767
188-78-57	HQ	PRINCETON UNIVERSITY	2674	192-55-61	HQ	MASS INST OF TECH	2336
188-78-57	HQ	UNIV OF ARIZONA	1137	192-55-61	HQ	POLY INST BROOKLYN	2827
188-78-57	HQ	UNIV OF ARIZONA	1164	192-55-61	HQ	RENSSELAER POLY-NY	2836
188-78-57	HQ	UNIV CALIF-SAN DIEGO	1562	192-55-61	HQ	STATE UNIV NY-BUFFAL	2844
188-78-58	GSFC	PRINCETON UNIVERSITY	2631	192-55-61	HQ	STATE U NY-STONY BRK	2867
189-00-00	ARC	CAL STATE U-SAN FRAN	1251	192-55-61	HQ	UNIV ALA-BIRMINGHAM	1035
189-00-00	ARC	MASS INST OF TECH	2253	192-55-61	HQ	UNIV CALIF-BERKELEY	1427
189-00-00	ARC	STANFORD UNIVERSITY	1261	192-55-61	HQ	UNIV CALIF-SAN DIEGO	1567
189-00-00	ARC	STANFORD UNIVERSITY	1263	192-55-61	HQ	UNIV OF HAWAII	1877
189-00-00	ARC	STANFORD UNIVERSITY	1311	192-55-61	HQ	UNIV OF HOUSTON	3310
189-00-00	ARC	UNIV OF IOWA	2027	192-55-61	HQ	UNIV MARYLAND-COL PK	2182
189-00-00	HQ	BOSTON UNIVERSITY	2210	192-55-61	HQ	UNIV OF MIAMI	1808
189-00-00	HQ	CALIF INST OF TECH	1210	192-55-61	HQ	UNIV OF MIAMI	1809
189-00-00	HQ	CATHOLIC UNIVERSITY	1736	192-55-61	HQ	U MINN-MNPLS-ST PAUL	2523
189-00-00	HQ	DARTMOUTH COLLEGE	2604	192-55-61	HQ	UNIV OF SO CAROLINA	3145
189-00-00	HQ	EMORY UNIVERSITY	1821	192-55-61	HQ	UNIV OF WASHINGTON	3543
189-00-00	HQ	HARVARD UNIVERSITY	2231	192-55-62	ARC	CALIF INST OF TECH	1235
189-00-00	HQ	HARVARD UNIVERSITY	2232	192-55-62	ARC	UNIV CALIF-L ANGELES	1469
189-00-00	HQ	HARVARD UNIVERSITY	2232	192-55-62	HQ	BOSTON UNIVERSITY	2211
189-00-00	HQ	INDIANA U-BLOOMINGTN	1981	192-55-62	HQ	HARVARD UNIVERSITY	2225
189-00-00	HQ	JOHNS HOPKINS UNIV	2134	192-55-62	HQ	INDIANA U-BLOOMINGTN	1983
189-00-00	HQ	MASS INST OF TECH	2321	192-55-62	HQ	MASS INST OF TECH	2332
189-00-00	HQ	MASS INST OF TECH	2333	192-55-62	HQ	ST JOSEPH COL-CONN	1692
189-00-00	HQ	OHIO STATE UNIV	2969	192-55-62	HQ	UNIV OF ARIZONA	1150
189-00-00	HQ	OREGON STATE UNIV	3017	192-55-62	HQ	UNIV CALIF-BERKELEY	1393
189-00-00	HQ	STANFORD UNIVERSITY	1328	192-55-62	HQ	UNIV CALIF-L ANGELES	1497
189-00-00	HQ	STATE UNIV NY-BUFFAL	2845	192-55-62	HQ	UNIV CALIF-L ANGELES	1498
189-00-00	HQ	UNIV CALIF-BERKELEY	1398	192-55-62	HQ	UNIV CALIF-S BARBARA	1577
189-00-00	HQ	UNIV CALIF-BERKELEY	1407	192-55-62	HQ	UNIV OF CHICAGO	1941
189-00-00	HQ	UNIV CALIF-DAVIS	1454	192-55-62	HQ	UNIV OF HOUSTON	3309
189-00-00	HQ	UNIV CALIF-SAN DIEGO	1554	192-55-62	HQ	UNIV OF HOUSTON	3309
189-00-00	HQ	UNIV OF CHICAGO	1922	192-55-62	HQ	UNIV TEXAS-AUSTIN	3348
189-00-00	HQ	UNIV OF DETROIT	2423	192-55-63	HQ	CORNELL UNIVERSITY	2769
189-00-00	HQ	UNIV ILLINOIS-CHICGO	1948	192-55-63	HQ	MICHIGAN STATE UNIV	2418
189-00-00	HQ	UNIV OF KANSAS	2059	192-55-63	HQ	PENNSYLVANIA STATE U	3084
189-00-00	HQ	UNIV OF KENTUCKY	2073	192-55-63	HQ	STANFORD UNIVERSITY	1322
189-00-00	HQ	UNIV MARYLAND-COL PK	2158	192-55-63	HQ	U MINN-MNPLS-ST PAUL	2517
189-00-00	HQ	UNIV OF MIAMI	1810	192-55-63	HQ	UNIV NEVADA-L VEGAS	2596
189-00-00	HQ	UNIV MICH-ANN ARBOR	2457	192-55-63	HQ	UNIV OF ROCHESTER	2881
189-00-00	HQ	U MINN-MNPLS-ST PAUL	2512	192-55-63	HQ	YALE UNIVERSITY	1710
189-00-00	HQ	UNIV MO-COLUMBIA	2558	192-55-64	ARC	CALIF INST OF TECH	1234
189-00-00	HQ	UNIV N CAR-CHPL HILL	2921	192-55-64	HQ	CALIF INST OF TECH	1213
189-00-00	HQ	UNIV OF SOUTHERN CAL	1607	192-55-64	HQ	FLORIDA STATE UNIV	1780
189-00-00	HQ	UNIV OF VIRGINIA	3488	192-55-64	HQ	FLORIDA STATE UNIV	1781
189-00-00	HQ	UNIV WISC-MADISON	3585	192-55-64	HQ	SO ILL UNIV-CARBONDL	1907
189-00-00	HQ	YALE UNIVERSITY	1713	192-55-64	HQ	UNIV OF HAWAII	1871
189-52-61	ARC	UNIV CALIF-DAVIS	1444	192-55-64	HQ	UTAH STATE UNIV	3425
189-52-61	HQ	AMERICAN UNIVERSITY	1734	193-58-61	HQ	U MINN-MNPLS-ST PAUL	2509
189-52-62	ARC	UNIV CALIF-L ANGELES	1489	193-58-62	HQ	HARDIN-SIMMONS UNIV	3203
189-54-06	JSC	UNIV TEX-DENTAL BRCH	3387	193-58-62	HQ	NO DAKOTA STATE UNIV	2925
189-54-06	JSC	WAKE FOREST UNIV	2924	193-58-63	HQ	GEORGE WASHINGTON U	1764
189-54-62	HQ	UNIV OF MASS-AMHERST	2399	195-00-00	GSFC	CASE WESTERN RESERVE	2935
189-54-63	HQ	UNIV MO-COLUMBIA	2559	195-00-00	GSFC	HOWARD UNIVERSITY	1767
189-55-65	ARC	STANFORD UNIVERSITY	1272	195-00-00	MSFC	UNIV ALA-HUNTSVILLE	1050

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RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.	RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.
195-00-00	HQ	COLLEGE VIRGIN ISLND	3612	196-41-82	HQ	MASS INST OF TECH	2362
195-00-00	HQ	WESLEYAN UNIVERSITY	1704	196-41-82	HQ	STANFORD UNIVERSITY	1358
195-42-50	ARC	UNIV OF SANTA CLARA	1591	196-41-82	HQ	UNIV ILLINOIS-URBANA	1963
195-42-60	JSC	COLUMBIA UNIVERSITY	2740	196-41-82	HQ	UNIV TEXAS-AUSTIN	3334
195-42-60	JSC	UNIV OF HOUSTON	3317	196-41-82	HQ	UNIV TEXAS-AUSTIN	3337
195-42-64	HQ	COLUMBIA UNIVERSITY	2734	196-41-84	HQ	FLORIDA STATE UNIV	1782
195-42-64	HQ	UNIV CALIF-S BARBARA	1574	196-41-84	HQ	PRINCETON UNIVERSITY	2663
195-42-64	HQ	UNIV TEXAS-AUSTIN	3336	310-20-32	GSFC	UNIV OF MASS-AMHERST	2396
195-42-65	HQ	UNIV CALIF-DAVIS	1461	310-40-25	GSFC	TEXAS A&M UNIVERSITY	3243
195-42-65	HQ	UNIV CALIF-L ANGELES	1485	310-40-39	GSFC	CARNEGIE-MELLON UNIV	3041
195-42-65	HQ	UNIV CALIF-SAN DIEGO	1538	311-00-00	GSFC	SYRACUSE UNIVERSITY	2874
195-42-65	HQ	UNIV CALIF-SAN DIEGO	1540	311-00-00	GSFC	UNIV OF DENVER	1674
195-42-65	HQ	UNIV MARYLAND-COL PK	2176	311-00-00	HQ	UNIV OF ROME	3623
195-42-65	HQ	UNIV OREGON-EUGENE	3027	311-02-31	GSFC	BOWIE STATE COLLEGE	2122
195-42-66	HQ	STANFORD UNIVERSITY	1335	311-02-31	GSFC	BOWIE STATE COLLEGE	2123
195-42-66	HQ	UNIV CALIF-SAN DIEGO	1565	311-02-65	GSFC	MASS INST OF TECH	2266
195-42-67	HQ	ARIZONA STATE UNIV	1110	311-04-03	WS	UNIV ALASKA-FAIRBNKS	1096
195-42-67	HQ	ILL INST OF TECH	1887	311-20-10	GSFC	NAT POLYTECHNIC INST	3617
195-42-67	HQ	LEHIGH UNIVERSITY	3056	311-20-10	GSFC	UNIV OF CHILE	3616
195-42-67	HQ	PURDUE UNIVERSITY	1995	311-20-20	GSFC	NEW MEX ST U-LAS CR	2684
195-42-67	HQ	TEXAS A&M UNIVERSITY	3270	311-20-20	GSFC	NEW MEX ST U-LAS CR	2685
195-42-67	HQ	UNIV CALIF-SAN DIEGO	1558	311-20-20	GSFC	NEW MEX ST U-LAS CR	2686
195-42-67	HQ	UNIV OF CHICAGO	1946	311-20-20	GSFC	NEW MEX ST U-LAS CR	2687
195-42-67	HQ	UNIV OF HOUSTON	3319	311-80-41	GSFC	UNIV TEXAS-AUSTIN	3350
195-42-67	HQ	UNIV MICH-ANN ARBOR	2470	311-90-53	GSFC	CLEMSON UNIV-CLEMSON	3139
195-42-67	HQ	UNIV OF PITTSBURGH	3116	320-00-00	LARC	PRINCETON UNIVERSITY	2666
195-42-67	HQ	UNIV OF VIRGINIA	3481	340-00-00	HQ	ALABAMA A&M UNIV	1002
195-43-50	HQ	UNIV OF HAWAII	1869	340-00-00	HQ	ALABAMA A&M UNIV	1003
195-43-50	HQ	UNIV MARYLAND-COL PK	2172	340-00-00	HQ	ALABAMA A&M UNIV	1004
195-43-50	HQ	UNIV TEXAS-AUSTIN	3340	340-00-00	HQ	ALABAMA A&M UNIV	1005
196-00-00	HQ	BRIGHAM YOUNG UNIV	3411	340-00-00	HQ	ALABAMA A&M UNIV	1006
196-00-00	HQ	UNIV OF ARIZONA	1156	340-00-00	HQ	ALABAMA A&M UNIV	1007
196-00-00	HQ	UNIV CALIF-SAN DIEGO	1556	340-00-00	HQ	AUBURN UNIV-AUBURN	1027
196-00-00	HQ	UNIV OF HAWAII	1875	340-00-00	HQ	BOSTON COLLEGE	2206
196-00-00	HQ	UNIV OF IOWA	2044	340-00-00	HQ	BOWIE STATE COLLEGE	2125
196-00-00	HQ	UNIV OF MASS-AMHERST	2397	340-00-00	HQ	BOWIE STATE COLLEGE	2126
196-41-51	GSFC	UNIV MARYLAND-COL PK	2153	340-00-00	HQ	BOWIE STATE COLLEGE	2127
196-41-67	ARC	CAL STATE U-CHICO	1240	340-00-00	HQ	CALIF INST OF TECH	1209
196-41-80	HQ	CALIF INST OF TECH	1195	340-00-00	HQ	CASE WESTERN RESERVE	2948
196-41-80	HQ	CALIF INST OF TECH	1204	340-00-00	HQ	CATHOLIC UNIVERSITY	1743
196-41-80	HQ	CALIF INST OF TECH	1220	340-00-00	HQ	CENTRAL ST UNIV-OHIO	2949
196-41-80	HQ	MASS INST OF TECH	2344	340-00-00	HQ	CENTRAL ST UNIV-OHIO	2950
196-41-80	HQ	NEW MEX ST U-LAS CR	2690	340-00-00	HQ	CENTRAL ST UNIV-OHIO	2951
196-41-80	HQ	STATE U NY-STONY BRK	2861	340-00-00	HQ	COLLEGE OF WM & MARY	3432
196-41-80	HQ	UNIV OF ARIZONA	1138	340-00-00	HQ	COLUMBIA UNIVERSITY	2738
196-41-80	HQ	UNIV OF ARIZONA	1143	340-00-00	HQ	CORNELL UNIVERSITY	2762
196-41-80	HQ	UNIV OF ARIZONA	1155	340-00-00	HQ	DELAWARE STATE COL	1721
196-41-80	HQ	UNIV OF ARIZONA	1160	340-00-00	HQ	DELAWARE STATE COL	1722
196-41-80	HQ	UNIV OF ARIZONA	1161	340-00-00	HQ	DELAWARE STATE COL	1723
196-41-80	HQ	UNIV OF ARIZONA	1170	340-00-00	HQ	DILLARD UNIVERSITY	2079
196-41-80	HQ	UNIV CALIF-BERKELEY	1423	340-00-00	HQ	FEDERAL CITY COLLEGE	1745
196-41-80	HQ	UNIV CALIF-BERKELEY	1426	340-00-00	HQ	GRAMBLING COLLEGE	2081
196-41-80	HQ	UNIV OF HAWAII	1873	340-00-00	HQ	GRAMBLING COLLEGE	2083
196-41-80	HQ	UNIV OF HAWAII	1876	340-00-00	HQ	GRAMBLING COLLEGE	2084
196-41-80	HQ	UNIV OF IOWA	2045	340-00-00	HQ	GRAMBLING COLLEGE	2085
196-41-80	HQ	UNIV TEXAS-AUSTIN	3339	340-00-00	HQ	GRAMBLING COLLEGE	2086
196-41-80	HQ	UNIV TEXAS-AUSTIN	3342	340-00-00	HQ	HAMPTON INSTITUTE	3441
196-41-80	HQ	UNIV OF WASHINGTON	3548	340-00-00	HQ	HOWARD UNIVERSITY	1769
196-41-82	HQ	CALIF INST OF TECH	1211	340-00-00	HQ	HOWARD UNIVERSITY	1771

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RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.	RTOP NO.	INSTAL- LATION	INSTITUTION	ACC NO.
340-00-00	HQ	HOWARD UNIVERSITY	1772	340-00-00	HQ	VIRGINIA STATE COL	3524
340-00-00	HQ	HOWARD UNIVERSITY	1773	340-00-00	HQ	VIRGINIA STATE COL	3525
340-00-00	HQ	HOWARD UNIVERSITY	1774	340-00-00	HQ	WASHINGTON UNIVERSTY	2578
340-00-00	HQ	HOWARD UNIVERSITY	1776	340-00-00	HQ	XAVIER UNIV-LA	2119
340-00-00	HQ	JACKSON STATE COL	2528	340-00-00	HQ	XAVIER UNIV-LA	2120
340-00-00	HQ	JACKSON STATE COL	2529	352-01-02	ARC	BOSTON COLLEGE	2203
340-00-00	HQ	LA STATE U-BAT ROUGE	2097	352-02-01	ARC	CORNELL UNIVERSITY	2772
340-00-00	HQ	LA STATE U-BAT ROUGE	2098	352-02-01	ARC	CORNELL UNIVERSITY	2778
340-00-00	HQ	MASS INST OF TECH	2330	352-02-01	ARC	STATE U NY-STONY BRK	2860
340-00-00	HQ	MICHIGAN STATE UNIV	2415	352-02-01	ARC	UNIV ALASKA-FAIRBNKS	1107
340-00-00	HQ	MISSISSIPPI STATE U	2541	352-02-01	ARC	UNIV OF ARIZONA	1158
340-00-00	HQ	MOREHOUSE COLLEGE	1857	352-02-01	ARC	UNIV CALIF-BERKELEY	1417
340-00-00	HQ	MOREHOUSE COLLEGE	1858	352-02-01	ARC	UNIV OF CHICAGO	1942
340-00-00	HQ	NORFOLK STATE COL	3442	352-02-01	ARC	UNIV TEXAS-AUSTIN	3349
340-00-00	HQ	NO CAR A&T STATE U	2891	352-02-01	ARC	UNIV OF WYOMING	3609
340-00-00	HQ	NO CAR A&T STATE U	2892	352-02-01	HQ	UNIV OF ARIZONA	1163
340-00-00	HQ	OLD DOMINION UNIV	3452	352-02-01	HQ	UNIV OF CHICAGO	1936
340-00-00	HQ	OLD DOMINION UNIV	3464	352-02-02	ARC	BOSTON COLLEGE	2205
340-00-00	HQ	OLD DOMINION UNIV	3465	352-02-02	ARC	UNIV ALASKA-FAIRBNKS	1105
340-00-00	HQ	OREGON STATE UNIV	3016	352-02-03	ARC	CALIF INST OF TECH	1229
340-00-00	HQ	PRAIRIE VIEW A&M COL	3208	352-02-03	ARC	CORNELL UNIVERSITY	2766
340-00-00	HQ	PRAIRIE VIEW A&M COL	3209	352-02-03	ARC	MASS INST OF TECH	2366
340-00-00	HQ	PRAIRIE VIEW A&M COL	3210	352-02-03	ARC	STATE U NY-STONY BRK	2866
340-00-00	HQ	PURDUE UNIVERSITY	1997	352-02-03	ARC	UNIV OF ARIZONA	1165
340-00-00	HQ	SO CAROLINA ST COL	3140	352-02-03	ARC	UNIV OF ARIZONA	1166
340-00-00	HQ	SO DAKOTA STATE UNIV	3151	352-02-03	ARC	UNIV OF ARIZONA	1167
340-00-00	HQ	SO UNIV-BATON ROUGE	2107	352-02-03	ARC	UNIV OF ARIZONA	1168
340-00-00	HQ	SO UNIV-BATON ROUGE	2108	352-02-03	ARC	UNIV CALIF-BERKELEY	1436
340-00-00	HQ	SO UNIV-BATON ROUGE	2109	352-02-03	ARC	UNIV OF CHICAGO	1945
340-00-00	HQ	SO UNIV-BATON ROUGE	2110	352-02-03	ARC	U MINN-MNPLS-ST PAUL	2522
340-00-00	HQ	SO UNIV-NEW ORLEANS	2111	352-02-03	ARC	UNIV OREGON-EUGENE	3029
340-00-00	HQ	STANFORD UNIVERSITY	1369	352-02-03	ARC	UNIV OREGON-EUGENE	3030
340-00-00	HQ	STANFORD UNIVERSITY	1370	352-02-03	ARC	UNIV OF ROCHESTER	2883
340-00-00	HQ	TALLADEGA COLLEGE	1030	352-03-00	ARC	UNIV OF ARIZONA	1169
340-00-00	HQ	TEXAS A&M UNIVERSITY	3262	352-03-00	HQ	U MINN-MNPLS-ST PAUL	2526
340-00-00	HQ	TUSKEGEE INSTITUTE	1032	366-00-00	ARC	UNIV CALIF-SAN DIEGO	1525
340-00-00	HQ	TUSKEGEE INSTITUTE	1033	366-00-00	ARC	UNIV OF HAWAII	1865
340-00-00	HQ	UNIV ALA-HUNTSVILLE	1073	366-00-00	ARC	UNIV ILLINOIS-URBANA	1950
340-00-00	HQ	UNIV ALA-TUSCALOOSA	1090	383-00-00	HQ	CORNELL UNIVERSITY	2768
340-00-00	HQ	UNIV ALASKA-FAIRBNKS	1101	383-00-00	HQ	PRINCETON UNIVERSITY	2656
340-00-00	HQ	UNIV OF ARIZONA	1145	383-00-00	HQ	SO DAKOTA SCHL MINES	3148
340-00-00	HQ	UNIV CALIF-BERKELEY	1403	383-00-00	HQ	UNIV OF MASS-AMHERST	2402
340-00-00	HQ	UNIV CALIF-BERKELEY	1406	383-00-00	HQ	UNIV TEXAS-EL PASO	3388
340-00-00	HQ	UNIV OF CHICAGO	1927	383-09-37	HQ	UNIV OREGON-EUGENE	3024
340-00-00	HQ	UNIV OF CHICAGO	1943	383-09-50	HQ	BOSTON UNIVERSITY	2212
340-00-00	HQ	UNIV COLORADO-BOLDR	1659	383-09-50	HQ	BROWN UNIVERSITY	3129
340-00-00	HQ	UNIV OF HOUSTON	3320	383-09-50	HQ	CALIF INST OF TECH	1216
340-00-00	HQ	UNIV OF KANSAS	2058	383-09-50	HQ	CORNELL UNIVERSITY	2755
340-00-00	HQ	UNIV MD-EASTRN SHORE	2199	383-09-50	HQ	JOHNS HOPKINS UNIV	2135
340-00-00	HQ	UNIV MD-EASTRN SHORE	2200	383-09-50	HQ	UNIV OF ARIZONA	1144
340-00-00	HQ	UNIV MD-EASTRN SHORE	2201	383-09-50	HQ	UNIV CALIF-BERKELEY	1414
340-00-00	HQ	U MINN-MNPLS-ST PAUL	2511	383-09-50	HQ	UNIV OF HAWAII	1868
340-00-00	HQ	UNIV NEBRASKA-LINCLN	2594	383-09-50	HQ	UNIV OF IDAHO	1884
340-00-00	HQ	UNIV OF NEW MEXICO	2700	383-09-50	HQ	UNIV OF NEW MEXICO	2699
340-00-00	HQ	UNIV SO MISSISSIPPI	2546	383-09-53	HQ	CAL STATE U-LG BEACH	1246
340-00-00	HQ	UNIV TENNESSEE-KNOXV	3174	383-09-53	HQ	FAIRLEIGH-DICKNSON U	2620
340-00-00	HQ	UNIV TEXAS-DALLAS	3375	383-09-53	HQ	HARVARD UNIVERSITY	2234
340-00-00	HQ	UNIV WISC-MADISON	3582	383-09-53	HQ	PRINCETON UNIVERSITY	2667
340-00-00	HQ	VIRGINIA STATE COL	3522	383-09-53	HQ	YALE UNIVERSITY	1709

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383-09-56	HQ	CALIF INST OF TECH	1199	385-36-00	HQ	DARTMOUTH COLLEGE	2606
383-09-56	HQ	CORNELL UNIVERSITY	2776	385-36-00	HQ	DARTMOUTH COLLEGE	2607
383-09-56	HQ	MASS INST OF TECH	2320	385-36-00	HQ	GRAMBLING COLLEGE	2080
383-09-56	HQ	MASS INST OF TECH	2339	385-36-00	HQ	MASS INST OF TECH	2376
383-09-56	HQ	UNIV CALIF-L ANGELES	1481	385-36-00	HQ	RICE UNIVERSITY	3224
383-09-56	HQ	UNIV CALIF-L ANGELES	1500	385-36-00	HQ	STANFORD UNIVERSITY	1299
383-09-56	HQ	UNIV TEXAS-AUSTIN	3345	385-36-00	HQ	STANFORD UNIVERSITY	1321
383-09-57	HQ	CALIF INST OF TECH	1201	385-36-00	HQ	STANFORD UNIVERSITY	1331
383-09-57	HQ	OREGON STATE UNIV	3013	385-36-00	HQ	UNIV ALASKA-FAIRBANKS	1102
383-09-57	HQ	UNIV CALIF-L ANGELES	1484	385-36-00	HQ	UNIV OF AUCKLAND	3624
383-09-57	HQ	UNIV CALIF-L ANGELES	1510	385-36-00	HQ	UNIV CALIF-BERKELEY	1432
383-09-57	HQ	UNIV CALIF-SAN DIEGO	1539	385-36-00	HQ	UNIV CALIF-L ANGELES	1499
383-09-57	HQ	UNIV OF CHICAGO	1921	385-36-00	HQ	UNIV OF DENVER	1682
383-09-57	HQ	UNIV OF NEW MEXICO	2702	385-36-00	HQ	UNIV OF DENVER	1683
384-47-01	ARC	UNIV CALIF-DAVIS	1448	385-36-00	HQ	UNIV ILLINOIS-URBANA	1955
384-47-66	ARC	STANFORD UNIVERSITY	1265	385-36-00	HQ	U MINN-MNPLS-ST PAUL	2515
384-47-81	HQ	UNIV OF CHICAGO	1938	385-36-00	HQ	UNIV NEW HAMPSHIRE	2619
384-47-81	HQ	UNIV COLORADO-BOLDR	1662	385-36-00	HQ	UNIV OF SOUTHERN CAL	1615
384-47-81	HQ	UNIV COLORADO-BOLDR	1671	385-36-00	HQ	UNIV OF SOUTHERN CAL	1616
384-47-81	HQ	UNIV MICH-ANN ARBOR	2477	385-36-00	HQ	UNIV TEXAS-DALLAS	3379
384-50-71	HQ	CALIF INST OF TECH	1219	385-36-00	HQ	UNIV TEXAS-DALLAS	3383
384-50-71	HQ	UNIV OREGON-EUGENE	3028	385-38-00	GSFC	GEORGE WASHINGTON U	1749
384-50-80	HQ	BROWN UNIVERSITY	3126	385-38-00	HQ	CALIF INST OF TECH	1231
384-50-80	HQ	HAMILTON COLLEGE	2795	385-38-00	HQ	COLUMBIA UNIVERSITY	2735
384-50-80	HQ	MASS INST OF TECH	2356	385-38-00	HQ	HARVARD UNIVERSITY	2240
384-50-80	HQ	NWN ST U-LOUISIANA	2106	385-38-00	HQ	UNIV CALIF-BERKELEY	1435
384-50-80	HQ	TULANE UNIVERSITY	2116	385-38-00	HQ	UNIV COLORADO-BOLDR	1657
384-50-80	HQ	TULANE UNIVERSITY	2117	385-38-00	HQ	UNIV MICH-ANN ARBOR	2475
384-50-80	HQ	UNIV CALIF-BERKELEY	1416	385-41-00	HQ	MASS INST OF TECH	2375
384-50-80	HQ	UNIV CALIF-L ANGELES	1505	385-41-00	HQ	NORTHWESTERN UNIV	1901
384-50-80	HQ	UNIV CALIF-S BARBARA	1578	385-41-00	HQ	UNIV COLORADO-BOLDR	1666
384-50-80	HQ	UNIV COLORADO-BOLDR	1665	385-41-00	HQ	UNIV OF FLORIDA	1805
384-50-80	HQ	UNIV COLORADO-BOLDR	1670	385-41-00	HQ	UNIV MICH-ANN ARBOR	2463
384-50-80	HQ	UNIV OF GEORGIA	1862	385-41-00	HQ	UNIV TEXAS-AUSTIN	3343
384-50-80	HQ	UNIV OF GEORGIA	1863	385-45-00	HQ	DUDLEY OBSERVATORY	2788
384-50-80	HQ	UNIV OF HOUSTON	3314	385-45-00	HQ	RUTGERS UNIV-NEWARK	2678
384-50-80	HQ	UNIV OF MASS-AMHERST	2403	385-45-00	HQ	TEMPLE UNIVERSITY	3097
384-50-80	HQ	UNIV OF MASS-AMHERST	2405	385-45-00	HQ	UNIV OF TOLEDO	2996
384-50-80	HQ	UNIV OF NEW MEXICO	2704	385-46-00	GSFC	UNIV MARYLAND-COL PK	2181
384-50-80	HQ	UNIV OF PENNSYLVANIA	3103	385-46-00	HQ	UNIV OF CHICAGO	1919
384-50-80	HQ	UNIV OF PITTSBURGH	3114	385-46-00	HQ	UNIV NEW HAMPSHIRE	2618
384-50-80	HQ	UNIV OF SANTA CLARA	1597	385-46-00	HQ	UNIV TEXAS-DALLAS	3380
384-50-80	HQ	UNIV TEXAS-AUSTIN	3341	385-46-00	HQ	UNIV TEXAS-DALLAS	3382
384-50-80	HQ	UNIV OF UTAH	3421	385-50-00	HQ	BOSTON COLLEGE	2202
384-50-80	HQ	UNIV OF UTAH	3424	385-50-00	HQ	UNIV CALIF-BERKELEY	1441
384-50-80	HQ	UNIV OF VIRGINIA	3480	385-50-00	HQ	UNIV CALIF-L ANGELES	1504
384-50-80	HQ	UNIV OF WASHINGTON	3551	385-50-00	HQ	UNIV OF CHICAGO	1935
384-50-80	HQ	VIRGINIA STATE COL	3523	385-50-00	HQ	UNIV OF WYOMING	3607
384-50-80	HQ	WEST TEXAS ST UNIV	3409	402-07-01	GSFC	FEDERAL CITY COLLEGE	1748
384-50-80	HQ	YALE UNIVERSITY	1718	404-02-02	GSFC	POLY INST BROOKLYN	2825
384-50-80	HQ	YALE UNIVERSITY	1720	405-02-02	GSFC	CITY COLLEGE OF N Y	2713
385-00-00	HQ	DARTMOUTH COLLEGE	2605	405-02-02	GSFC	STATE U NY-STONY BRK	2854
385-00-00	HQ	MASS INST OF TECH	2340	405-02-02	GSFC	UNIV OF ARIZONA	1151
385-00-00	HQ	MASS INST OF TECH	2341	405-06-01	HQ	UNIV OF DENVER	1685
385-00-00	HQ	STANFORD UNIVERSITY	1326	408-02-01	GSFC	COLUMBIA UNIVERSITY	2718
385-00-00	HQ	UNIV COLORADO-BOLDR	1661	408-02-01	GSFC	COLUMBIA UNIVERSITY	2719
385-36-00	HQ	BRIGHAM YOUNG UNIV	3410	408-02-02	GSFC	COLUMBIA UNIVERSITY	2729
385-36-00	HQ	CALIF INST OF TECH	1228	408-02-02	GSFC	COLUMBIA UNIVERSITY	2732
385-36-00	HQ	CATHOLIC UNIVERSITY	1737	408-02-02	GSFC	LONG ISLAND UNIV	2799

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408-02-02	GSFC	MASS INST OF TECH	2369	501-15-81	ARC	STANFORD UNIVERSITY	1364
408-02-02	GSFC	NEW YORK UNIVERSITY	2815	501-15-82	LARC	GEORGE WASHINGTON U	1757
408-02-02	GSFC	UNIV WISC-MADISON	3598	501-15-82	LARC	OLD DOMINION UNIV	3456
408-06-02	HQ	OHIO STATE UNIV	2963	501-15-82	LARC	UNIV OF VIRGINIA	3483
490-02-01	HQ	UNIV OF ROME	3622	501-15-82	LARC	VIRGINIA POLY INST	3508
490-02-02	LARC	SOUTHERN METHODIST U	3232	501-15-83	LERC	MASS INST OF TECH	2377
492-02-03	KSC	NEW MEX ST U-LAS CR	2689	501-15-83	LERC	PENNSYLVANIA STATE U	3092
501-01-06	LERC	CASE WESTERN RESERVE	2931	501-15-83	LERC	PRINCETON UNIVERSITY	2670
501-01-06	LERC	LEHIGH UNIVERSITY	3053	501-15-83	LERC	UNIV ILLINOIS-URBANA	1969
501-01-06	LERC	MASS INST OF TECH	2309	501-15-83	LERC	UNIV TENNESSEE-KNOXV	3177
501-01-06	LERC	STATE U NY-STONY BRK	2864	501-15-83	LERC	UNIV TENNESSEE-KNOXV	3178
501-01-06	LERC	UNIV OF KENTUCKY	2074	501-21-20	LARC	VIRGINIA COMNWLTH U	3493
501-02-01	LARC	MASS INST OF TECH	2373	501-21-21	ARC	NO CAROLINA STATE U	2909
501-03-02	LARC	MASS INST OF TECH	2331	501-21-21	ARC	STANFORD UNIVERSITY	1361
501-03-02	LARC	OHIO UNIVERSITY	2981	501-21-22	LARC	OLD DOMINION UNIV	3449
501-03-02	LARC	PRINCETON UNIVERSITY	2645	501-21-22	LARC	PRINCETON UNIVERSITY	2659
501-03-11	ARC	MASS INST OF TECH	2317	501-21-22	LARC	UNIV SO MISSISSIPPI	2547
501-03-11	ARC	MASS INST OF TECH	2371	501-21-23	LARC	UNIV OF CINCINNATI	2989
501-03-11	ARC	STANFORD UNIVERSITY	1298	501-22-01	LARC	BOSTON UNIVERSITY	2213
501-03-11	ARC	UNIV OF SANTA CLARA	1588	501-22-01	LARC	GEORGE WASHINGTON U	1758
501-04-01	LARC	GEORGE WASHINGTON U	1756	501-22-01	LARC	GEORGIA INST OF TECH	1844
501-04-01	LARC	GEORGE WASHINGTON U	1760	501-22-01	LARC	UNIV CALIF-L ANGELES	1511
501-04-01	LARC	NEW YORK UNIVERSITY	2816	501-22-02	LARC	GEORGIA INST OF TECH	1853
501-04-01	LARC	PENNSYLVANIA STATE U	3077	501-22-02	LARC	LEHIGH UNIVERSITY	3055
501-04-01	LARC	PRINCETON UNIVERSITY	2662	501-22-02	LARC	NO CAROLINA STATE U	2912
501-04-01	LARC	PURDUE UNIVERSITY	2008	501-22-02	LARC	OLD DOMINION UNIV	3458
501-04-01	LARC	UNIV TENNESSEE-KNOXV	3168	501-22-02	LARC	UNIV MICH-ANN ARBOR	2468
501-04-01	LERC	PENNSYLVANIA STATE U	3065	501-22-02	LARC	YOUNGSTOWN STATE U	2999
501-04-01	LERC	UNIV OF SOUTHERN CAL	1600	501-22-03	LARC	OHIO STATE UNIV	2978
501-04-01	LERC	WICHITA STATE UNIV	2070	501-22-03	LARC	UNIV OF CINCINNATI	2991
501-04-03	LARC	GEORGIA INST OF TECH	1849	501-22-03	LARC	UNIV OF KANSAS	2067
501-04-03	LARC	GEORGIA INST OF TECH	1854	501-22-03	LARC	VIRGINIA POLY INST	3514
501-04-03	LARC	NEW YORK UNIVERSITY	2813	501-22-03	LERC	PRINCETON UNIVERSITY	2665
501-04-03	LARC	VIRGINIA POLY INST	3494	501-22-03	LERC	TEXAS A&M UNIVERSITY	3269
501-04-03	LERC	CALIF INST OF TECH	1203	501-22-04	LARC	CLEMSON UNIV-CLEMSON	3137
501-04-03	LERC	MASS INST OF TECH	2326	501-22-04	LARC	STANFORD UNIVERSITY	1310
501-06-01	ARC	STANFORD UNIVERSITY	1318	501-22-04	LARC	UNIV CALIF-L ANGELES	1516
501-06-01	LARC	GEORGIA INST OF TECH	1851	501-22-04	LARC	UNIV TENNESSEE-KNOXV	3171
501-06-01	LARC	UNIV OF KANSAS	2066	501-22-05	ARC	PRINCETON UNIVERSITY	2654
501-06-02	ARC	STANFORD UNIVERSITY	1354	501-22-05	ARC	UNIV TEXAS-AUSTIN	3346
501-06-02	ARC	UNIV ILLINOIS-URBANA	1971	501-22-05	LARC	OLD DOMINION UNIV	3443
501-06-04	ARC	MASS INST OF TECH	2353	501-24-01	LARC	VIRGINIA POLY INST	3519
501-06-08	ARC	UNIV OF WASHINGTON	3535	501-24-06	LERC	UNIV ILLINOIS-URBANA	1954
501-06-08	LARC	MICHIGAN STATE UNIV	2420	501-24-07	LERC	BUCKNELL UNIVERSITY	3033
501-06-09	ARC	UNIV OF WASHINGTON	3540	501-24-08	LERC	CASE WESTERN RESERVE	2936
501-06-09	LARC	UNIV OF VIRGINIA	3477	501-24-10	LERC	MISSISSIPPI STATE U	2542
501-06-10	LARC	OLD DOMINION UNIV	3454	501-24-10	LERC	NORTHWESTERN UNIV	1899
501-06-11	LARC	NEW YORK UNIVERSITY	2810	501-24-10	LERC	ROSE-HULMAN INST TEC	2013
501-06-11	LARC	PRINCETON UNIVERSITY	2641	501-24-10	LERC	UNIV OF VIRGINIA	3471
501-08-10	LARC	NEW YORK UNIVERSITY	2804	501-24-20	ARC	UNIV MICH-ANN ARBOR	2425
501-08-10	LARC	OLD DOMINION UNIV	3457	501-24-20	GSFC	CAL STATE U-S DIEGO	1250
501-08-10	LARC	UNIV OF PENNSYLVANIA	3102	501-24-20	LERC	MASS INST OF TECH	2342
501-08-10	MSFC	COLORADO STATE UNIV	1633	501-26-01	FRC	UNIV CALIF-L ANGELES	1494
501-08-10	MSFC	TEXAS A&M UNIVERSITY	3247	501-26-02	ARC	UNIV OF WASHINGTON	3539
501-08-10	MSFC	UNIV OKLAHOMA-NORMAN	3006	501-26-05	LARC	MASS INST OF TECH	2374
501-08-10	MSFC	UNIV TENNESSEE-KNOXV	3163	501-29-01	ARC	UNIV CALIF-BERKELEY	1430
501-09-02	LARC	NO CAROLINA STATE U	2904	501-29-02	ARC	STANFORD UNIVERSITY	1330
501-09-02	LARC	UNIV ILLINOIS-URBANA	1953	501-29-03	ARC	CAL STATE U-SAN JOSE	1253
501-15-81	ARC	PURDUE UNIVERSITY	2009	501-29-03	ARC	UNIV CALIF-SAN DIEGO	1564

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501-29-12	LARC	OLD DOMINION UNIV	3463	502-22-03	LERC	BROWN UNIVERSITY	3125
501-29-12	LARC	UNIV OF VIRGINIA	3486	502-22-03	LERC	CARNEGIE-MELLON UNIV	3042
501-29-14	LARC	MASS INST OF TECH	2365	502-22-03	LERC	COLORADO STATE UNIV	1636
501-29-21	FRC	UNIV OF VIRGINIA	3485	502-22-03	LERC	LEHIGH UNIVERSITY	3061
501-38-11	LARC	CHRISTPHR NEWPRT COL	3429	502-23-16	MSFC	UNIV ALA-TUSCALOOSA	1079
501-38-11	LARC	HAMPTON INSTITUTE	3439	502-23-21	MSFC	UNIV ALA-TUSCALOOSA	1080
501-38-12	LERC	RENSSELAER POLY-NY	2837	502-23-32	GSFC	CARNEGIE-MELLON UNIV	3040
501-38-13	LERC	MASS INST OF TECH	2338	502-23-32	GSFC	YALE UNIVERSITY	1707
501-38-13	MSFC	COLORADO STATE UNIV	1629	502-23-51	MSFC	MISSISSIPPI STATE U	2534
501-9X-00	ARC	COLORADO STATE UNIV	1627	502-23-51	MSFC	TEXAS A&M UNIVERSITY	3245
501-9X-00	ARC	MASS INST OF TECH	2260	502-23-56	LARC	VANDERBILT UNIVERSTY	3182
501-9X-00	ARC	PRINCETON UNIVERSITY	2629	502-23-56	LARC	OLD DOMINION UNIV	3459
501-9X-00	ARC	STANFORD UNIVERSITY	1268	502-24-03	LERC	COLORADO STATE UNIV	1642
502-01-01	ARC	STANFORD UNIVERSITY	1346	502-24-41	LARC	PENNSYLVANIA STATE U	3063
502-01-02	ARC	UNIV OREGON-EUGENE	3031	502-25-53	LERC	UNIV OF FLORIDA	1797
502-01-02	LERC	NORTHWESTERN UNIV	1895	502-25-53	LERC	UNIV OF FLORIDA	1806
502-01-02	LERC	TEMPLE UNIVERSITY	3098	502-25-70	LERC	LOWELL TECH INST	2245
502-01-02	HQ	STANFORD UNIVERSITY	1309	502-25-72	GSFC	DUKE UNIVERSITY	2887
502-01-02	HQ	TULANE UNIVERSITY	2114	502-27-01	ARC	UNIV OF TULSA	3010
502-01-03	LARC	BROWN UNIVERSITY	3127	502-28-04	LERC	UNIV MARYLAND-COL PK	2185
502-01-03	LARC	CARNEGIE-MELLON UNIV	3038	502-28-04	LERC	UNIV MICH-ANN ARBOR	2469
502-01-04	LERC	RENSSELAER POLY-NY	2832	502-31-50	HQ	UNIV OF WASHINGTON	3528
502-01-04	LERC	RICE UNIVERSITY	3220	502-31-51	LERC	UNIV TENNESSEE-KNOXV	3176
502-01-04	LERC	UNIV OF WASHINGTON	3531	502-32-02	LARC	PRINCETON UNIVERSITY	2643
502-01-06	LERC	STANFORD UNIVERSITY	1363	502-32-02	LARC	UNIV OF VIRGINIA	3478
502-03-11	GSFC	HARVARD UNIVERSITY	2227	502-33-83	LARC	OHIO STATE UNIV	2971
502-03-12	HQ	MASS INST OF TECH	2311	502-37-01	ARC	IOWA STATE UNIV	2022
502-03-32	HQ	UNIV MARYLAND-COL PK	2173	502-37-01	ARC	UNIV ARKANSAS-FAYETV	1173
502-03-52	LARC	UNIV OF NOTRE DAME	2015	502-37-01	LARC	NEW YORK UNIVERSITY	2817
502-03-53	LARC	NO CAROLINA STATE U	2908	502-37-01	LARC	NO CAROLINA STATE U	2915
502-03-53	LARC	UNIV COLORADO-BOLDR	1672	502-37-01	LARC	UNIV OF CINCINNATI	2992
502-04-01	LERC	COLORADO STATE UNIV	1646	502-37-02	ARC	STANFORD UNIVERSITY	1351
502-04-14	HQ	PRINCETON UNIVERSITY	2638	502-37-02	ARC	UNIV MARYLAND-COL PK	2184
502-04-25	LERC	CATHOLIC UNIVERSITY	1742	503-04-01	LERC	CORNELL UNIVERSITY	2756
502-04-25	LERC	COLORADO STATE UNIV	1639	503-04-01	LERC	GEORGIA INST OF TECH	1848
502-04-25	LERC	GEORGIA INST OF TECH	1842	503-04-01	LERC	GEORGIA INST OF TECH	1852
502-04-25	LERC	GEORGIA INST OF TECH	1843	503-04-01	LERC	UNIV OF ARIZONA	1154
502-04-25	LERC	PENNSYLVANIA STATE U	3080	503-04-01	HQ	UNIV OF ARIZONA	1139
502-04-25	LERC	TENNESSEE TECH U	3154	503-10-01	HQ	CORNELL UNIVERSITY	2759
502-04-25	LERC	TULANE UNIVERSITY	2115	503-10-01	HQ	UNIV OF WASHINGTON	3534
502-04-25	LERC	UNIV COLORADO-BOLDR	1673	503-10-02	LERC	COLORADO STATE UNIV	1638
502-04-35	LERC	CORNELL UNIVERSITY	2779	503-10-02	LERC	UNIV WISC-MADISON	3586
502-04-35	LERC	CORNELL UNIVERSITY	2780	503-10-03	LARC	VANDERBILT UNIVERSTY	3184
502-04-35	LERC	UNIV MARYLAND-COL PK	2190	503-10-03	HQ	UNIV OF FLORIDA	1801
502-04-35	LERC	UNIV MARYLAND-COL PK	2196	503-10-03	HQ	UNIV ILLINOIS-URBANA	1966
502-05-50	LERC	NO CAROLINA STATE U	2916	503-10-04	LERC	MICHIGAN STATE UNIV	2416
502-05-50	LERC	WAYNE STATE UNIV	2487	503-10-04	LERC	UNIV OF CINCINNATI	2987
502-05-51	LERC	UNIV OF CONNECTICUT	1700	503-24-01	NSO-N	MASS INST OF TECH	2380
502-07-01	ARC	BROWN UNIVERSITY	3124	503-25-01	LERC	LINFIELD COLLEGE	3011
502-07-01	ARC	UNIV OF SANTA CLARA	1593	598-85-00	LERC	COLORADO STATE UNIV	1628
502-11-11	ARC	UNIV CALIF-BERKELEY	1440	598-85-00	LERC	HIRAM COLLEGE	2952
502-21-20	LARC	UNIV OF WASHINGTON	3542	599-85-00	LARC	COLLEGE OF WM & MARY	3433
502-21-20	LERC	UNIV OF PITTSBURGH	3117	599-85-00	LARC	GEORGE WASHINGTON U	1754
502-21-24	LERC	GEORGIA INST OF TECH	1846	599-85-00	LARC	HAMPTON INSTITUTE	3440
502-21-27	ARC	COLORADO STATE UNIV	1644	599-85-00	LARC	UNIV MICH-ANN ARBOR	2480
502-21-29	LARC	VIRGINIA POLY INST	3495	599-85-00	LARC	VIRGINIA POLY INST	3517
502-21-30	MSFC	APPALACHIAN STATE U	2884	599-85-00	LARC	VIRGINIA STATE COL	3526
502-21-30	MSFC	UNIV ALA-HUNTSVILLE	1065	599-85-00	LERC	CASE WESTERN RESERVE	2930

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601-13-00	GSFC	UNIV WISC-MADISON	3569	641-14-01	GSFC	UNIV OF KANSAS	2049
602-43-00	GSFC	UNIV OF SOUTHERN CAL	1601	641-14-01	GSFC	UNIV NEBRASKA-LINCLN	2589
602-43-00	GSFC	UNIV OF SOUTHERN CAL	1609	641-14-01	GSFC	UNIV OF NEVADA-RENO	2597
604-42-00	GSFC	STANFORD UNIVERSITY	1285	641-14-01	GSFC	UNIV TENNESSEE-KNOXV	3156
607-06-00	LARC	TENNESSEE TECH U	3153	641-14-02	GSFC	CORNELL UNIVERSITY	2748
607-06-00	LARC	UNIV OF UTAH	3418	641-14-02	GSFC	DARTMOUTH COLLEGE	2602
607-07-00	WS	UNIV OF UTAH	3413	641-14-02	GSFC	UNIV TENNESSEE-KNOXV	3155
607-12-00	GSFC	NEW MEX ST U-LAS CR	2688	641-14-03	GSFC	COLORADO SCH OF MINE	1620
607-12-00	GSFC	UNIV MICH-ANN ARBOR	2436	641-14-03	GSFC	INDIANA U-BLOOMINGTN	1974
607-12-00	GSFC	UNIV MICH-ANN ARBOR	2437	641-14-03	GSFC	STANFORD UNIVERSITY	1286
610-11-00	GSFC	UNIV CALIF-L ANGELES	1495	641-14-03	GSFC	STANFORD UNIVERSITY	1287
611-13-00	GSFC	UNIV MARYLAND-COL PK	2192	641-14-03	GSFC	UNIV OF IOWA	2037
611-13-00	GSFC	UNIV WISC-MADISON	3572	641-14-03	GSFC	UNIV OF MONTANA	2587
613-00-00	GSFC	UNIV OF MASS-AMHERST	2394	641-14-03	GSFC	UNIV OF UTAH	3412
630-00-00	GSFC	NEW MEX ST U-LAS CR	2683	641-14-03	GSFC	UNIV OF WYOMING	3601
630-00-00	GSFC	STANFORD UNIVERSITY	1281	641-14-03	GSFC	UNIV OF WYOMING	3602
630-00-00	GSFC	UNIV CALIF-BERKELEY	1377	641-14-04	GSFC	TEXAS TECH UNIV	3275
630-00-00	GSFC	UNIV CALIF-SAN DIEGO	1527	641-14-04	GSFC	UNIV ALA-TUSCALOOSA	1074
630-00-00	GSFC	UNIV TEXAS-AUSTIN	3322	641-14-04	GSFC	UNIV OF VERMONT	3427
630-00-00	LARC	OHIO STATE UNIV	2955	641-14-05	GSFC	LONG ISLAND UNIV	2797
630-00-00	LARC	UNIV COLORADO-BOLDR	1649	641-14-05	GSFC	UNIV OF ARIZONA	1122
630-12-00	GSFC	UNIV CALIF-SAN DIEGO	1526	641-14-07	GSFC	OLD DOMINION UNIV	3446
630-22-00	GSFC	UNIV CALIF-L ANGELES	1473	641-14-07	GSFC	OREGON STATE UNIV	3012
630-22-00	GSFC	UNIV CALIF-SAN DIEGO	1530	641-14-07	GSFC	PENNSYLVANIA STATE U	3066
630-22-00	GSFC	U MINN-MNPLS-ST PAUL	2499	641-14-07	GSFC	PURDUE UNIVERSITY	1987
630-22-00	GSFC	UNIV NEW HAMPSHIRE	2611	641-14-07	GSFC	UNIV OF ARIZONA	1123
630-52-00	LARC	MASS INST OF TECH	2251	641-14-07	GSFC	UNIV OF ARIZONA	1124
630-52-00	LARC	MASS INST OF TECH	2252	641-14-07	GSFC	UNIV OF DELAWARE	1726
630-52-00	LARC	NEW YORK UNIVERSITY	2803	641-14-07	GSFC	UNIV OF IDAHO	1881
630-52-00	LARC	TEXAS A&M UNIVERSITY	3241	641-14-07	GSFC	UNIV TENNESSEE-KNOXV	3158
630-52-00	LARC	UNIV CALIF-L ANGELES	1465	641-14-07	GSFC	UNIV WISC-MADISON	3571
630-52-00	LARC	UNIV OF KANSAS	2048	641-14-07	JSC	TEXAS A&M UNIVERSITY	3259
630-52-00	LARC	UNIV MICH-ANN ARBOR	2424	641-14-07	JSC	TEXAS A&M UNIVERSITY	3261
636-18-00	GSFC	UNIV ILLINOIS-URBANA	1967	641-14-08	GSFC	AMERICAN UNIVERSITY	1731
636-18-00	GSFC	UNIV OF PERU	3626	641-14-08	GSFC	MISSISSIPPI STATE U	2530
636-18-71	LARC	NO CAROLINA STATE U	2914	641-14-08	GSFC	UNIV TENNESSEE-KNOXV	3157
636-18-71	LARC	NORTHWESTERN UNIV	1902	641-14-09	GSFC	UNIV OF ARIZONA	1126
636-18-71	LARC	OHIO STATE UNIV	2968	682-10-60	GSFC	STANFORD UNIVERSITY	1283
636-18-71	LARC	OHIO STATE UNIV	2975	683-00-00	GSFC	STANFORD UNIVERSITY	1284
636-18-71	LARC	SOUTHERN METHODIST U	3237	684-00-00	ARC	UNIV COLORADO-BOLDR	1650
636-18-71	LARC	UNIV MICH-ANN ARBOR	2465	686-10-00	HQ	UNIV OF PITTSBURGH	3109
636-18-9X	GSFC	UNIV TEXAS-DALLAS	3367	708-00-00	ARC	UNIV OF NOTTINGHAM	3619
640-00-00	JSC	TEXAS A&M UNIVERSITY	3251	708-40-01	ARC	STANFORD UNIVERSITY	1270
641-14-00	GSFC	LONG ISLAND UNIV	2798	720-00-00	LARC	PRINCETON UNIVERSITY	2655
641-14-00	GSFC	NO CAROLINA STATE U	2896	720-00-00	LARC	PURDUE UNIVERSITY	2001
641-14-00	GSFC	UNIV OF DELAWARE	1725	720-00-00	LERC	PENNSYLVANIA STATE U	3079
641-14-00	GSFC	VIRGINIA POLY INST	3497	720-03-10	LERC	CASE WESTERN RESERVE	2933
641-14-01	GSFC	CORNELL UNIVERSITY	2746	720-03-13	LERC	CLEMSON UNIV-CLEMSON	3138
641-14-01	GSFC	CORNELL UNIVERSITY	2747	720-52-10	FRC	TEXAS A&M UNIVERSITY	3264
641-14-01	GSFC	MICHIGAN STATE UNIV	2413	721-00-00	LARC	PURDUE UNIVERSITY	1993
641-14-01	GSFC	MISSISSIPPI STATE U	2531	721-00-00	LARC	UNIV TENNESSEE-KNOXV	3169
641-14-01	GSFC	PURDUE UNIVERSITY	1985	721-00-00	LERC	PRINCETON UNIVERSITY	2648
641-14-01	GSFC	PURDUE UNIVERSITY	1986	721-00-00	LERC	VANDERBILT UNIVERSTY	3185
641-14-01	GSFC	SO DAKOTA STATE UNIV	3149	721-05-10	ARC	STANFORD UNIVERSITY	1339
641-14-01	GSFC	TEXAS A&M UNIVERSITY	3244	722-03-11	LARC	LA STATE U-BAT ROUGE	2087
641-14-01	GSFC	UNIV ALASKA-FAIRBNKS	1093	731-13-50	JSC	TEXAS A&M UNIVERSITY	3253
641-14-01	GSFC	UNIV OF ARIZONA	1125	735-01-01	WS	UNIV OF MILAN	3621
641-14-01	GSFC	UNIV CALIF-BERKELEY	1379	736-00-00	LARC	NO CAROLINA STATE U	2893
641-14-01	GSFC	UNIV CALIF-RIVERSIDE	1519	736-00-00	LARC	PRINCETON UNIVERSITY	2623

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737-54-12	LARC	LEHIGH UNIVERSITY	3060	811-22-00	ARC	UNIV OF CHICAGO	1908
741-72-03	LARC	PRINCETON UNIVERSITY	2625	811-22-00	ARC	UNIV OF CHICAGO	1909
741-72-03	LARC	UNIV ILLINOIS-URBANA	1960	811-22-00	ARC	UNIV OF IOWA	2026
741-72-04	LERC	MICHIGAN STATE UNIV	2417	811-22-00	ARC	UNIV OF IOWA	2028
741-72-04	LERC	UNIV OF CINCINNATI	2990	811-22-00	ARC	UNIV OF SOUTHERN CAL	1598
742-73-01	LARC	NORTHEASTERN UNIV	2386	811-22-00	ARC	UNIV OF SOUTHERN CAL	1599
747-81-01	FRC	MASS INST OF TECH	2328	811-22-00	GSFC	UNIV NEW HAMPSHIRE	2610
760-60-01	LARC	MASS INST OF TECH	2370	815-20-00	LARC	BROWN UNIVERSITY	3121
760-60-01	LARC	NO CAROLINA STATE U	2911	815-20-00	LARC	CALIF INST OF TECH	1176
760-60-01	LARC	PRINCETON UNIVERSITY	2624	815-20-00	LARC	CALIF INST OF TECH	1177
760-60-01	LARC	UNIV ILLINOIS-URBANA	1970	815-20-00	LARC	CORNELL UNIVERSITY	2743
760-60-01	LARC	UNIV OF KANSAS	2062	815-20-00	LARC	FLORIDA STATE UNIV	1779
760-60-01	LARC	VIRGINIA POLY INST	3520	815-20-00	LARC	HARVARD UNIVERSITY	2217
760-60-05	FRC	UNIV OF KANSAS	2065	815-20-00	LARC	INDIANA U-BLOOMINGTN	1973
760-61-01	ARC	CALIF INST OF TECH	1225	815-20-00	LARC	MASS INST OF TECH	2246
760-61-02	LARC	UNIV OF WASHINGTON	3532	815-20-00	LARC	MASS INST OF TECH	2247
760-61-02	LARC	UNIV OF WASHINGTON	3533	815-20-00	LARC	MASS INST OF TECH	2248
760-62-01	LARC	OLD DOMINION UNIV	3451	815-20-00	LARC	POMONA COLLEGE	1257
760-62-01	LARC	UNIV OF FLORIDA	1802	815-20-00	LARC	PRINCETON UNIVERSITY	2622
760-63-02	LARC	PENNSYLVANIA STATE U	3078	815-20-00	LARC	STANFORD UNIVERSITY	1258
760-63-02	LARC	UNIV WISC-MILWAUKEE	3600	815-20-00	LARC	STANFORD UNIVERSITY	1259
760-63-03	ARC	MASS INST OF TECH	2256	815-20-00	LARC	STANFORD UNIVERSITY	1260
760-63-03	ARC	MASS INST OF TECH	2258	815-20-00	LARC	STATE U NY-STONY BRK	2849
760-64-01	ARC	NEW YORK UNIVERSITY	2821	815-20-00	LARC	UNIV OF HOUSTON	3283
760-64-01	ARC	STANFORD UNIVERSITY	1362	815-20-00	LARC	U MINN-MNPLS-ST PAUL	2490
760-64-01	ARC	UNIV MARYLAND-COL PK	2194	815-20-00	LARC	UNIV OF NEW MEXICO	2693
760-64-60	LARC	NEW YORK UNIVERSITY	2814	815-20-00	LARC	UNIV OF ROCHESTER	2879
760-64-60	LARC	UNIV MICH-ANN ARBOR	2467	815-20-00	LARC	UNIV TEXAS-DALLAS	3358
760-66-01	LARC	NEW YORK UNIVERSITY	2819	815-20-00	LARC	UNIV OF WASHINGTON	3527
760-66-01	LARC	UNIV TENNESSEE-KNOXV	3175	821-00-00	GSFC	HARVARD UNIVERSITY	2219
760-72-02	ARC	TUFTS UNIVERSITY	2392	821-00-00	GSFC	RUTGERS U-N BRUNSWK	2676
764-74-05	LERC	STANFORD UNIVERSITY	1278	821-00-00	GSFC	UNIV COLORADO-BOLDR	1651
764-74-05	LERC	U MINN-MNPLS-ST PAUL	2493	821-22-00	GSFC	MASS INST OF TECH	2263
766-71-02	ARC	PRINCETON UNIVERSITY	2628	821-22-00	GSFC	UNIV CALIF-SAN DIEGO	1528
766-75-02	LARC	OKLAHOMA STATE UNIV	3002	821-22-00	GSFC	UNIV CALIF-SAN DIEGO	1529
766-75-02	LARC	RENSSELAER POLY-NY	2838	821-22-00	GSFC	U MINN-MNPLS-ST PAUL	2494
766-75-02	LARC	VIRGINIA POLY INST	3521	821-22-00	GSFC	UNIV NEW HAMPSHIRE	2609
768-81-01	LARC	UNIV OF KANSAS	2063	821-22-00	GSFC	UNIV OF NEW MEXICO	2694
768-81-05	ARC	MASS INST OF TECH	2257	821-32-00	GSFC	COLUMBIA UNIVERSITY	2717
768-83-01	ARC	UNIV OF SANTA CLARA	1595	821-32-00	GSFC	UNIV CALIF-BERKELEY	1380
770-18-01	LERC	NEW YORK UNIVERSITY	2820	821-32-00	GSFC	UNIV CALIF-BERKELEY	1381
770-18-03	ARC	CAL STATE U-SAN JOSE	1252	821-32-00	GSFC	UNIV COLORADO-BOLDR	1654
791-91-51	LARC	PENNSYLVANIA STATE U	3091	821-32-00	GSFC	UNIV OF IOWA	2038
791-91-51	HQ	MASS INST OF TECH	2304	821-32-00	GSFC	UNIV WISC-MADISON	3567
791-91-51	HQ	MASS INST OF TECH	2305	821-32-00	GSFC	UNIV OF WYOMING	3603
791-93-03	ARC	STANFORD UNIVERSITY	1275	823-12-00	GSFC	CORNELL UNIVERSITY	2775
792-91-01	HQ	PRINCETON UNIVERSITY	2653	823-12-00	GSFC	UNIV OF IOWA	2035
802-31-00	GSFC	CORNELL UNIVERSITY	2749	823-12-00	GSFC	U MINN-MNPLS-ST PAUL	2497
802-31-00	GSFC	UNIV MARYLAND-COL PK	2148	831-00-00	HQ	MASS INST OF TECH	2378
811-22-00	ARC	CALIF INST OF TECH	1178	831-00-00	HQ	WESLEYAN UNIVERSITY	1702
811-22-00	ARC	CALIF INST OF TECH	1179	831-12-00	HQ	UNIV OF ARIZONA	1153
811-22-00	ARC	DUDLEY OBSERVATORY	2782	831-22-00	GSFC	UNIV WISC-MADISON	3565
811-22-00	ARC	DUDLEY OBSERVATORY	2783	831-41-00	GSFC	MASS INST OF TECH	2261
811-22-00	ARC	UNIV OF ARIZONA	1113	831-42-00	GSFC	PRINCETON UNIVERSITY	2630
811-22-00	ARC	UNIV OF ARIZONA	1114	832-12-00	GSFC	LA STATE U-BAT ROUGE	2088
811-22-00	ARC	UNIV OF ARIZONA	1116	832-12-00	GSFC	LA STATE U-BAT ROUGE	2089
811-22-00	ARC	UNIV CALIF-L ANGELES	1468	832-12-00	GSFC	STANFORD UNIVERSITY	1288
811-22-00	ARC	UNIV CALIF-SAN DIEGO	1523	832-12-00	GSFC	UNIV OF ARIZONA	1117
811-22-00	ARC	UNIV CALIF-SAN DIEGO	1524	832-12-00	GSFC	UNIV OF ARIZONA	1128

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832-12-00	MSFC	CALIF INST OF TECH	1183	861-42-00	GSFC	UNIV OF IOWA	2036
832-12-00	MSFC	CALIF INST OF TECH	1184	861-42-00	GSFC	UNIV MARYLAND-COL PK	2147
832-12-00	MSFC	CALIF INST OF TECH	1185	861-51-00	GSFC	CARNEGIE-MELLON UNIV	3039
832-12-00	MSFC	CALIF INST OF TECH	1188	861-52-00	GSFC	STANFORD UNIVERSITY	1289
832-12-00	MSFC	COLUMBIA UNIVERSITY	2721	861-52-00	GSFC	UNIV CALIF-BERKELEY	1378
832-12-00	MSFC	COLUMBIA UNIVERSITY	2722	861-52-00	GSFC	UNIV OF CHICAGO	1912
832-12-00	MSFC	COLUMBIA UNIVERSITY	2723	861-52-00	GSFC	UNIV OF IOWA	2030
832-12-00	MSFC	COLUMBIA UNIVERSITY	2724	861-52-00	GSFC	UNIV OF IOWA	2032
832-12-00	MSFC	MASS INST OF TECH	2273	861-52-00	GSFC	UNIV MICH-ANN ARBOR	2431
832-12-00	MSFC	MASS INST OF TECH	2277	861-52-00	GSFC	U MINN-MNPLS-ST PAUL	2495
832-12-00	MSFC	MASS INST OF TECH	2278	861-52-00	GSFC	U MINN-MNPLS-ST PAUL	2500
832-12-00	MSFC	UNIV CALIF-BERKELEY	1382	863-00-00	LARC	UNIV OF IOWA	2024
832-12-00	MSFC	UNIV CALIF-BERKELEY	1384	863-11-00	LARC	UNIV OF IOWA	2025
832-12-00	MSFC	UNIV CALIF-SAN DIEGO	1531	863-11-00	LARC	U MINN-MNPLS-ST PAUL	2491
832-12-00	MSFC	UNIV CALIF-SAN DIEGO	1532	863-11-00	LARC	U MINN-MNPLS-ST PAUL	2492
832-12-00	MSFC	UNIV OF CHICAGO	1914	870-42-00	GSFC	UNIV OF IOWA	2034
832-12-00	MSFC	U MINN-MNPLS-ST PAUL	2501	872-00-00	GSFC	UNIV TEXAS-DALLAS	3362
832-12-00	MSFC	U MINN-MNPLS-ST PAUL	2502	872-12-00	GSFC	UNIV TEXAS-DALLAS	3360
832-12-00	MSFC	WASHINGTON UNIVERSTY	2576	872-12-00	GSFC	UNIV TEXAS-DALLAS	3363
841-00-00	GSFC	CALIF INST OF TECH	1181	872-12-00	GSFC	UNIV TEXAS-DALLAS	3364
841-00-00	GSFC	DARTMOUTH COLLEGE	2601	874-32-00	GSFC	UNIV MICH-ANN ARBOR	2432
841-00-00	GSFC	RICE UNIVERSITY	3212	877-11-00	GSFC	VIRGINIA POLY INST	3512
841-00-00	GSFC	STANFORD UNIVERSITY	1280	877-12-00	GSFC	NORTHWESTERN UNIV	1898
841-00-00	GSFC	UNIV CALIF-L ANGELES	1470	877-12-00	GSFC	STANFORD UNIVERSITY	1282
841-00-00	GSFC	UNIV CALIF-L ANGELES	1471	878-12-00	GSFC	MASS INST OF TECH	2264
841-00-00	GSFC	UNIV OF CHICAGO	1910	878-21-00	GSFC	GEORGE WASHINGTON U	1761
841-00-00	GSFC	UNIV OF CHICAGO	1911	879-00-00	ARC	NEW MEX ST U-LAS CR	2681
841-00-00	GSFC	UNIV OF CHICAGO	1911	879-00-00	JSC	UNIV ALASKA-FAIRBNKS	1097
841-00-00	GSFC	UNIV COLORADO-BOLDR	1652	879-00-00	HQ	UNIV ILLINOIS-URBANA	1958
841-00-00	GSFC	UNIV COLORADO-BOLDR	1653	879-10-00	WS	RICE UNIVERSITY	3213
841-00-00	GSFC	UNIV MICH-ANN ARBOR	2427	879-11-00	GSFC	UNIV ALASKA-FAIRBNKS	1095
841-00-00	GSFC	UNIV MICH-ANN ARBOR	2428	879-11-00	GSFC	UNIV MICH-ANN ARBOR	2435
841-00-00	GSFC	UNIV OF NEW MEXICO	2695	879-11-00	GSFC	UNIV MICH-ANN ARBOR	2439
841-00-00	GSFC	UNIV TEXAS-DALLAS	3361	879-11-00	JSC	UNIV ALASKA-FAIRBNKS	1098
841-12-00	GSFC	UNIV OF ARIZONA	1118	879-11-00	JSC	U MINN-MNPLS-ST PAUL	2503
841-12-00	GSFC	UNIV MICH-ANN ARBOR	2430	879-11-00	WS	UNIV ILLINOIS-URBANA	1965
849-00-00	HQ	MASS INST OF TECH	2334	879-11-00	HQ	CALIF INST OF TECH	1221
849-00-00	HQ	UNIV CALIF-SAN DIEGO	1550	879-11-00	HQ	CALIF INST OF TECH	1230
852-22-00	GSFC	HARVARD UNIVERSITY	2220	879-11-00	HQ	HARVARD UNIVERSITY	2238
852-22-00	GSFC	JOHNS HOPKINS UNIV	2129	879-11-00	HQ	JOHNS HOPKINS UNIV	2132
852-22-00	GSFC	UNIV COLORADO-BOLDR	1655	879-11-00	HQ	MASS INST OF TECH	2379
852-22-00	GSFC	UNIV MICH-ANN ARBOR	2433	879-11-00	HQ	PENNSYLVANIA STATE U	3076
852-22-00	GSFC	UNIV MICH-ANN ARBOR	2434	879-11-00	HQ	PENNSYLVANIA STATE U	3090
852-22-00	GSFC	UNIV MICH-ANN ARBOR	2438	879-11-00	HQ	PRINCETON UNIVERSITY	2675
852-22-00	GSFC	U MINN-MNPLS-ST PAUL	2498	879-11-00	HQ	UNIV ALASKA-FAIRBNKS	1103
852-22-00	GSFC	UNIV TEXAS-DALLAS	3365	879-11-00	HQ	UNIV ALASKA-FAIRBNKS	1104
852-22-00	GSFC	UNIV TEXAS-DALLAS	3366	879-11-00	HQ	UNIV ALASKA-FAIRBNKS	1106
852-22-00	GSFC	YALE UNIVERSITY	1705	879-11-00	HQ	UNIV CALIF-BERKELEY	1409
855-12-00	GSFC	OHIO STATE UNIV	2972	879-11-00	HQ	UNIV CALIF-BERKELEY	1412
855-12-00	HQ	OHIO STATE UNIV	2965	879-11-00	HQ	UNIV CALIF-BERKELEY	1419
857-12-00	GSFC	UNIV OF IOWA	2033	879-11-00	HQ	UNIV CALIF-BERKELEY	1421
857-12-00	GSFC	U MINN-MNPLS-ST PAUL	2496	879-11-00	HQ	UNIV OF CHICAGO	1932
861-00-00	GSFC	CARNEGIE-MELLON UNIV	3036	879-11-00	HQ	UNIV COLORADO-BOLDR	1658
861-00-00	GSFC	UNIV OF IOWA	2029	879-11-00	HQ	UNIV COLORADO-BOLDR	1660
861-00-00	GSFC	UNIV TEXAS-DALLAS	3359	879-11-00	HQ	UNIV COLORADO-BOLDR	1664
861-41-00	GSFC	UNIV WISC-MADISON	3566	879-11-00	HQ	UNIV OF HAWAII	1874
861-42-00	GSFC	CALIF INST OF TECH	1182	879-11-00	HQ	UNIV OF HOUSTON	3315
861-42-00	GSFC	MASS INST OF TECH	2262	879-11-00	HQ	UNIV MARYLAND-COL PK	2179
861-42-00	GSFC	UNIV OF CHICAGO	1913	879-11-00	HQ	UNIV MICH-ANN ARBOR	2459
861-42-00	GSFC	UNIV OF IOWA	2031	879-11-00	HQ		

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879-11-00	HQ	U MINN-MNPLS-ST PAUL	2514	914-40-00	GSFC	FEDERAL CITY COLLEGE	1746
879-11-00	HQ	U MINN-MNPLS-ST PAUL	2516	914-40-00	GSFC	UNIV MARYLAND-COL PK	2191
879-11-00	HQ	U MINN-MNPLS-ST PAUL	2521	914-40-00	GSFC	VIRGINIA POLY INST	3510
879-11-00	HQ	UNIV NEW HAMPSHIRE	2616	914-40-00	JSC	ARIZONA STATE UNIV	1111
879-11-00	HQ	UNIV NEW HAMPSHIRE	2617	914-40-00	JSC	BROWN UNIVERSITY	3130
879-11-00	HQ	UNIV OF PITTSBURGH	3110	914-40-00	JSC	CALIF INST OF TECH	1190
879-11-00	HQ	UNIV TEXAS-DALLAS	3381	914-40-00	JSC	CALIF INST OF TECH	1191
879-11-00	HQ	UNIV WISC-MADISON	3579	914-40-00	JSC	CALIF INST OF TECH	1192
879-40-00	ARC	NEW MEX ST U-LAS CR	2682	914-40-00	JSC	CALIF INST OF TECH	1205
883-00-00	ARC	STANFORD UNIVERSITY	1271	914-40-00	JSC	CALIF INST OF TECH	1206
883-00-00	ARC	U TEX HEALTH CTR-DAL	3394	914-40-00	JSC	CALIF INST OF TECH	1207
883-9X-00	ARC	BOWLING GRN STATE U	2927	914-40-00	JSC	CALIF INST OF TECH	1217
894-12-00	GSFC	UNIV MICH-ANN ARBOR	2429	914-40-00	JSC	CALIF INST OF TECH	1233
904-00-00	HQ	OHIO STATE UNIV	2980	914-40-00	JSC	CASE WESTERN RESERVE	2934
905-00-00	JSC	MASS INST OF TECH	2287	914-40-00	JSC	CASE WESTERN RESERVE	2937
908-10-00	JSC	MASS INST OF TECH	2288	914-40-00	JSC	CASE WESTERN RESERVE	2938
908-20-00	JSC	UNIV OF HOUSTON	3287	914-40-00	JSC	COLLEGE VIRGIN ISLND	3611
908-41-00	JSC	GEORGIA INST OF TECH	1838	914-40-00	JSC	COLORADO STATE UNIV	1643
908-41-00	JSC	MASS INST OF TECH	2290	914-40-00	JSC	COLUMBIA UNIVERSITY	2725
908-42-01	JSC	RICE UNIVERSITY	3227	914-40-00	JSC	COLUMBIA UNIVERSITY	2726
908-42-39	JSC	UNIV TEXAS-AUSTIN	3325	914-40-00	JSC	COLUMBIA UNIVERSITY	2727
908-42-39	JSC	YALE UNIVERSITY	1706	914-40-00	JSC	COLUMBIA UNIVERSITY	2739
908-44-13	JSC	TEXAS A&M UNIVERSITY	3257	914-40-00	JSC	COLUMBIA UNIVERSITY	2741
908-44-38	JSC	UNIV OF UTAH	3423	914-40-00	JSC	CORNELL UNIVERSITY	2750
908-51-00	MSFC	AUBURN UNIV-AUBURN	1016	914-40-00	JSC	CORNELL UNIVERSITY	2770
908-51-00	MSFC	MISSISSIPPI STATE U	2533	914-40-00	JSC	CORNELL UNIVERSITY	2774
908-51-08	MSFC	AUBURN UNIV-AUBURN	1021	914-40-00	JSC	FAIRLEIGH-DICKNSON U	2621
908-51-21	MSFC	MASS INST OF TECH	2271	914-40-00	JSC	GEORGE WASHINGTON U	1759
908-52-08	MSFC	AUBURN UNIV-AUBURN	1015	914-40-00	JSC	HARVARD UNIVERSITY	2230
908-52-08	MSFC	UNIV OF FLORIDA	1790	914-40-00	JSC	HARVARD UNIVERSITY	2236
908-52-18	MSFC	MASS INST OF TECH	2275	914-40-00	JSC	HARVARD UNIVERSITY	2237
908-52-18	MSFC	UNIV MO-ROLLA	2568	914-40-00	JSC	INDIANA U-BLOOMINGTN	1975
908-52-38	MSFC	UNIV ALA-HUNTSVILLE	1045	914-40-00	JSC	INDIANA U-BLOOMINGTN	1982
908-52-46	MSFC	UNIV OF DAYTON	2995	914-40-00	JSC	LEHIGH UNIVERSITY	3051
908-54-08	MSFC	MISSISSIPPI STATE U	2535	914-40-00	JSC	LEHIGH UNIVERSITY	3052
908-54-08	MSFC	UNIV CALIF-L ANGELES	1476	914-40-00	JSC	LEHIGH UNIVERSITY	3057
908-54-08	MSFC	UNIV OF SANTA CLARA	1587	914-40-00	JSC	LEHIGH UNIVERSITY	3059
908-54-33	MSFC	UNIV ALA-HUNTSVILLE	1060	914-40-00	JSC	MASS INST OF TECH	2292
908-62-32	KSC	UNIV OF FLORIDA	1794	914-40-00	JSC	MASS INST OF TECH	2293
908-67-05	KSC	UNIV OF FLORIDA	1804	914-40-00	JSC	MASS INST OF TECH	2295
908-91-24	HQ	MASS INST OF TECH	2372	914-40-00	JSC	MASS INST OF TECH	2296
908-94-24	HQ	BETHUNE-COOKMAN COL	1777	914-40-00	JSC	MASS INST OF TECH	2299
908-94-24	HQ	UNIV MARYLAND-COL PK	2174	914-40-00	JSC	MASS INST OF TECH	2348
909-41-07	JSC	CITY COLLEGE OF N Y	2715	914-40-00	JSC	MASS INST OF TECH	2349
909-41-07	JSC	UNIV MO-COLUMBIA	2556	914-40-00	JSC	MASS INST OF TECH	2350
909-52-47	MSFC	UNIV MICH-ANN ARBOR	2445	914-40-00	JSC	MASS INST OF TECH	2352
909-55-05	MSFC	AUBURN UNIV-AUBURN	1023	914-40-00	JSC	MASS INST OF TECH	2360
909-55-47	MSFC	UNIV ALA-HUNTSVILLE	1056	914-40-00	JSC	NO CAROLINA STATE U	2897
909-62-47	KSC	FLORIDA TECH UNIV	1786	914-40-00	JSC	NORTHEASTERN UNIV	2383
909-64-09	KSC	UNIV OF FLORIDA	1792	914-40-00	JSC	NORTHEASTERN UNIV	1896
909-64-13	KSC	UNIV OF SO CAROLINA	3142	914-40-00	JSC	NORTHWESTERN UNIV	3015
909-64-42	KSC	GEORGIA INST OF TECH	1839	914-40-00	JSC	OREGON STATE UNIV	3085
909-64-47	KSC	FLORIDA INST OF TECH	1778	914-40-00	JSC	PENNSYLVANIA STATE U	3086
909-64-47	KSC	FLORIDA TECH UNIV	1785	914-40-00	JSC	PENNSYLVANIA STATE U	3087
909-72-47	LARC	OLD DOMINION UNIV	3460	914-40-00	JSC	PENNSYLVANIA STATE U	3087
914-14-00	JSC	UNIV OF FLORIDA	1791	914-40-00	JSC	PRINCETON UNIVERSITY	2646
914-14-00	JSC	UNIV OF SOUTHERN CAL	1604	914-40-00	JSC	PRINCETON UNIVERSITY	2657
914-40-00	ARC	UNIV CALIF-L ANGELES	1467	914-40-00	JSC	PRINCETON UNIVERSITY	2658
914-40-00	ARC	UNIV MO-COLUMBIA	2563	914-40-00	JSC	PURDUE UNIVERSITY	1996
						PURDUE UNIVERSITY	2005

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914-40-00	JSC	PURDUE UNIVERSITY	2007	914-40-00	JSC	UNIV OF NEW MEXICO	2701
914-40-00	JSC	RICE UNIVERSITY	3214	914-40-00	JSC	UNIV N CAR-CHPL HILL	2922
914-40-00	JSC	RICE UNIVERSITY	3215	914-40-00	JSC	UNIV OREGON-EUGENE	3025
914-40-00	JSC	RICE UNIVERSITY	3223	914-40-00	JSC	UNIV OREGON-EUGENE	3026
914-40-00	JSC	RICE UNIVERSITY	3225	914-40-00	JSC	UNIV OF PITTSBURGH	3111
914-40-00	JSC	RICE UNIVERSITY	3226	914-40-00	JSC	UNIV OF PITTSBURGH	3113
914-40-00	JSC	STANFORD UNIVERSITY	1293	914-40-00	JSC	UNIV TEXAS-DALLAS	3368
914-40-00	JSC	STANFORD UNIVERSITY	1356	914-40-00	JSC	UNIV TEXAS-DALLAS	3370
914-40-00	JSC	STATE UNIV NY-BUFAL	2848	914-40-00	JSC	UNIV TEXAS-DALLAS	3377
914-40-00	JSC	STATE U NY-STONY BRK	2855	914-40-00	JSC	UNIV TEXAS-DALLAS	3378
914-40-00	JSC	STATE U NY-STONY BRK	2856	914-40-00	JSC	UNIV TEXAS-GALVESTON	3392
914-40-00	JSC	STATE U NY-STONY BRK	2858	914-40-00	JSC	UNIV OF TULSA	3009
914-40-00	JSC	STATE U NY-STONY BRK	2863	914-40-00	JSC	UNIV OF UTAH	3422
914-40-00	JSC	UNIV OF ARIZONA	1157	914-40-00	JSC	UNIV OF WASHINGTON	3550
914-40-00	JSC	UNIV CALIF-BERKELEY	1386	914-40-00	JSC	UNIV WISC-MADISON	3583
914-40-00	JSC	UNIV CALIF-BERKELEY	1387	914-40-00	JSC	WASHINGTON UNIVERSTY	2577
914-40-00	JSC	UNIV CALIF-BERKELEY	1390	914-40-00	JSC	WASHINGTON UNIVERSTY	2580
914-40-00	JSC	UNIV CALIF-BERKELEY	1391	914-40-00	JSC	WESLEYAN UNIVERSITY	1701
914-40-00	JSC	UNIV CALIF-BERKELEY	1392	914-40-00	JSC	WESLEYAN UNIVERSITY	1703
914-40-00	JSC	UNIV CALIF-BERKELEY	1404	914-40-00	JSC	YALE UNIVERSITY	1717
914-40-00	JSC	UNIV CALIF-BERKELEY	1405	914-49-00	GSFC	DUKE UNIVERSITY	2888
914-40-00	JSC	UNIV CALIF-BERKELEY	1415	914-49-00	JSC	DUDLEY OBSERVATORY	2787
914-40-00	JSC	UNIV CALIF-BERKELEY	1418	914-49-00	JSC	JOHNS HOPKINS UNIV	2131
914-40-00	JSC	UNIV CALIF-BERKELEY	1433	914-49-00	JSC	RICE UNIVERSITY	3216
914-40-00	JSC	UNIV CALIF-BERKELEY	1437	914-49-00	JSC	STANFORD UNIVERSITY	1295
914-40-00	JSC	UNIV CALIF-DAVIS	1462	914-49-00	JSC	STATE U NY-STONY BRK	2850
914-40-00	JSC	UNIV CALIF-L ANGELES	1490	914-49-00	JSC	ST U NY COL-GENESCO	2869
914-40-00	JSC	UNIV CALIF-L ANGELES	1491	914-49-00	JSC	U ARKANSAS-MONTICELLO	1175
914-40-00	JSC	UNIV CALIF-L ANGELES	1493	914-49-00	JSC	UNIV CALIF-BERKELEY	1388
914-40-00	JSC	UNIV CALIF-L ANGELES	1501	914-49-00	JSC	UNIV CALIF-L ANGELES	1479
914-40-00	JSC	UNIV CALIF-L ANGELES	1502	914-49-00	JSC	UNIV CALIF-L ANGELES	1480
914-40-00	JSC	UNIV CALIF-L ANGELES	1503	914-49-00	JSC	UNIV CALIF-SAN DIEGO	1534
914-40-00	JSC	UNIV CALIF-L ANGELES	1512	914-49-00	JSC	UNIV TEXAS-DALLAS	3369
914-40-00	JSC	UNIV CALIF-SAN DIEGO	1545	914-49-00	JSC	UNIV OF UTAH	3414
914-40-00	JSC	UNIV CALIF-SAN DIEGO	1546	914-49-00	JSC	UNIV OF UTAH	3415
914-40-00	JSC	UNIV CALIF-SAN DIEGO	1547	914-49-00	JSC	UNIV OF VIRGINIA	3469
914-40-00	JSC	UNIV CALIF-SAN DIEGO	1557	914-49-00	JSC	WOODSHOLE OCEAN INST	2406
914-40-00	JSC	UNIV CALIF-S BARBARA	1579	914-49-00	JSC	WOODSHOLE OCEAN INST	2407
914-40-00	JSC	UNIV OF CHICAGO	1915	914-49-00	MSFC	PORTLAND STATE UNIV	3021
914-40-00	JSC	UNIV OF CHICAGO	1924	914-50-00	JSC	ALBANY MED COLLEGE	2707
914-40-00	JSC	UNIV OF CHICAGO	1925	914-50-00	JSC	BAYLOR UNIV-MED COL	3189
914-40-00	JSC	UNIV OF CHICAGO	1926	914-50-00	JSC	BAYLOR UNIV-MED COL	3193
914-40-00	JSC	UNIV OF CHICAGO	1933	914-50-00	JSC	BAYLOR UNIV-MED COL	3199
914-40-00	JSC	UNIV OF CHICAGO	1934	914-50-00	JSC	DUKE UNIVERSITY	2886
914-40-00	JSC	UNIV COLORADO-BOLDR	1667	914-50-00	JSC	EASTRN MICHIGAN UNIV	2411
914-40-00	JSC	UNIV OF DELAWARE	1729	914-50-00	JSC	FORDHAM UNIVERSITY	2792
914-40-00	JSC	UNIV OF HOUSTON	3308	914-50-00	JSC	HOUSTON BAPTIST COL	3204
914-40-00	JSC	UNIV OF HOUSTON	3312	914-50-00	JSC	LAMAR UNIVERSITY	3205
914-40-00	JSC	UNIV OF HOUSTON	3313	914-50-00	JSC	LA STATE U-BAT ROUGE	2092
914-40-00	JSC	UNIV OF KENTUCKY	2076	914-50-00	JSC	LA STATE U-NEW ORLNS	2102
914-40-00	JSC	UNIV OF KENTUCKY	2077	914-50-00	JSC	MASS INST OF TECH	2289
914-40-00	JSC	UNIV MARYLAND-COL PK	2149	914-50-00	JSC	MASS INST OF TECH	2297
914-40-00	JSC	UNIV MARYLAND-COL PK	2183	914-50-00	JSC	MASS INST OF TECH	2298
914-40-00	JSC	UNIV OF MASS-AMHERST	2400	914-50-00	JSC	OAKLAND UNIVERSITY	2422
914-40-00	JSC	UNIV OF MIAMI	1812	914-50-00	JSC	OHIO STATE UNIV	2959
914-40-00	JSC	U MINN-MNPLS-ST PAUL	2510	914-50-00	JSC	OHIO STATE UNIV	2960
914-40-00	JSC	U MINN-MNPLS-ST PAUL	2518	914-50-00	JSC	OHIO STATE UNIV	2961
914-40-00	JSC	U MINN-MNPLS-ST PAUL	2520	914-50-00	JSC	RICE UNIVERSITY	3219
914-40-00	JSC	UNIV MO-ROLLA	2570	914-50-00	JSC	TEXAS A&M UNIVERSITY	3249

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914-50-00	JSC	TEXAS A&M UNIVERSITY	3254	924-23-00	JSC	UNIV OF CHICAGO	1916
914-50-00	JSC	TEXAS A&M UNIVERSITY	3266	931-31-00	MSFC	UNIV ALA-TUSCALOOSA	1076
914-50-00	JSC	TEXAS TECH UNIV	3277	931-50-00	MSFC	UNIV N CAR-CHPL HILL	2918
914-50-00	JSC	TEXAS TECH UNIV	3278	931-9X-00	MSFC	UNIV OF FLORIDA	1788
914-50-00	JSC	TUSKEGEE INSTITUTE	1034	933-31-00	MSFC	LA STATE U-BAT ROUGE	2090
914-50-00	JSC	UNIV ALASKA-FAIRBNKS	1100	933-35-00	MSFC	AUBURN UNIV-AUBURN	1009
914-50-00	JSC	UNIV OF ARIZONA	1134	933-40-00	MSFC	UNIV ALA-HUNTSVILLE	1062
914-50-00	JSC	UNIV OF ARIZONA	1135	933-50-00	GSFC	UNIV OF ARIZONA	1120
914-50-00	JSC	UNIV CALIF-BERKELEY	1420	933-50-00	GSFC	UNIV OF ARIZONA	1127
914-50-00	JSC	UNIV CALIF-L ANGELES	1477	933-50-00	MSFC	AUBURN UNIV-AUBURN	1013
914-50-00	JSC	UNIV CALIF-L ANGELES	1478	933-50-00	MSFC	COLORADO STATE UNIV	1631
914-50-00	JSC	UNIV OF CONNECTICUT	1694	933-50-00	MSFC	COLORADO STATE UNIV	1632
914-50-00	JSC	UNIV OF CONNECTICUT	1695	933-50-00	MSFC	GEORGIA INST OF TECH	1829
914-50-00	JSC	UNIV OF HOUSTON	3288	933-50-00	MSFC	GEORGIA INST OF TECH	1833
914-50-00	JSC	UNIV OF HOUSTON	3291	933-50-00	MSFC	GEORGIA INST OF TECH	1835
914-50-00	JSC	UNIV OF HOUSTON	3292	933-50-00	MSFC	GRAMBLING COLLEGE	2082
914-50-00	JSC	UNIV OF HOUSTON	3296	933-50-00	MSFC	LA STATE U-BAT ROUGE	2091
914-50-00	JSC	UNIV OF HOUSTON	3302	933-50-00	MSFC	LA STATE U-BAT ROUGE	2096
914-50-00	JSC	UNIV OF HOUSTON	3307	933-50-00	MSFC	LA STATE U-NEW ORLNS	2101
914-50-00	JSC	UNIV OF HOUSTON	3311	933-50-00	MSFC	LOYOLA UNIV-LA	2105
914-50-00	JSC	UNIV OF IDAHO	1883	933-50-00	MSFC	MASS INST OF TECH	2280
914-50-00	JSC	UNIV ILLINOIS-URBANA	1951	933-50-00	MSFC	MISSISSIPPI STATE U	2532
914-50-00	JSC	UNIV MICH-ANN ARBOR	2476	933-50-00	MSFC	MISSISSIPPI STATE U	2536
914-50-00	JSC	U MINN-MNPLS-ST PAUL	2519	933-50-00	MSFC	MISSISSIPPI STATE U	2540
914-50-00	JSC	UNIV MISS-MEDL CNTR	2544	933-50-00	MSFC	STATE UNIV NY-BUFFAL	2841
914-50-00	JSC	UNIV MO-COLUMBIA	2553	933-50-00	MSFC	TULANE UNIVERSITY	2112
914-50-00	JSC	UNIV MO-COLUMBIA	2561	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1039
914-50-00	JSC	UNIV OREGON-EUGENE	3023	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1041
914-50-00	JSC	UNIV SAN FRANCISCO	1586	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1042
914-50-00	JSC	U TEX CANCER CENTER	3355	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1044
914-50-00	JSC	U TEX CANCER CENTER	3356	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1046
914-50-00	JSC	UNIV TEXAS-AUSTIN	3338	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1047
914-50-00	JSC	UNIV TEXAS-GALVESTON	3389	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1049
914-50-00	JSC	UNIV TEX-PUB HEALTH	3399	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1054
914-50-00	JSC	UNIV TEX-PUB HEALTH	3404	933-50-00	MSFC	UNIV ALA-HUNTSVILLE	1055
914-50-00	JSC	UNIV TEX-PUB HEALTH	3408	933-50-00	MSFC	UNIV OF DENVER	1677
914-50-00	HQ	DUDLEY OBSERVATORY	2790	933-50-00	MSFC	UNIV OF FLORIDA	1789
914-50-00	HQ	UNIV CALIF-L ANGELES	1513	933-50-00	MSFC	UNIV MICH-ANN ARBOR	2443
914-51-00	JSC	BAYLOR UNIV-MED COL	3201	933-50-00	MSFC	UNIV TENNESSEE-KNOXV	3173
914-51-00	JSC	FLORIDA STATE UNIV	1783	933-50-00	MSFC	UNIV TEXAS-AUSTIN	3323
914-51-00	JSC	STANFORD UNIVERSITY	1348	933-50-00	MSFC	VANDERBILT UNIVERSITY	3181
914-51-00	JSC	TEXAS A&M UNIVERSITY	3255	940-50-00	MSFC	PRINCETON UNIVERSITY	2632
914-51-00	JSC	TEXAS A&M UNIVERSITY	3258	942-92-00	JSC	YALE UNIVERSITY	1715
914-51-00	JSC	TEXAS CHRISTIAN UNIV	3272	945-43-00	HQ	UNIV OF ARIZONA	1148
914-51-00	JSC	U MINN-MNPLS-ST PAUL	2504	945-82-00	HQ	UNIV OF SOUTHERN CAL	1619
914-51-00	JSC	UNIV OF SOUTHERN CAL	1610	945-84-00	MSFC	PRINCETON UNIVERSITY	2633
914-51-00	JSC	U TEX CANCER CENTER	3354	945-84-00	HQ	NORTHWESTERN UNIV	1897
914-51-00	JSC	UNIV TEXAS-AUSTIN	3347	948-60-00	JSC	CORNELL UNIVERSITY	2751
914-51-00	JSC	UNIV OF WASHINGTON	3545	948-60-00	JSC	MASS INST OF TECH	2294
914-51-00	JSC	VIRGINIA COMNWLTH U	3492	948-60-00	JSC	TEXAS WOMANS UNIV	3281
914-52-00	JSC	BROOME COMMUNITY COL	2708	948-60-00	JSC	UNIV CALIF-BERKELEY	1389
914-80-00	JSC	UNIV OF HOUSTON	3285	948-60-90	JSC	BAYLOR UNIV-MED COL	3191
921-30-00	JSC	NEW MEX ST U-LAS CR	2692	948-60-90	JSC	BAYLOR UNIV-MED COL	3195
921-30-00	JSC	UNIV OF HOUSTON	3286	948-60-90	JSC	HARVARD UNIVERSITY	2221
923-00-00	MSFC	UNIV OF IOWA	2039	948-60-90	JSC	U TEX CANCER CENTER	3357
924-22-00	JSC	UNIV OF IDAHO	1882	948-60-90	JSC	UNIV TEX-PUB HEALTH	3401
924-22-00	JSC	UNIV WISC-MILWAUKEE	3599	948-60-90	JSC	UNIV WISC-MADISON	3576
924-22-00	HQ	PENNSYLVANIA STATE U	3083	948-60-90	JSC	VANDERBILT UNIVERSITY	3183
924-23-00	JSC	NORTHWESTERN UNIV	1890	948-60-91	JSC	BAYLOR UNIV-MED COL	3188

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948-60-91	JSC	FORDHAM UNIVERSITY	2794	953-37-00	MSFC	UNIV ALA-HUNTSVILLE	1072
948-60-91	JSC	UNIV MO-COLUMBIA	2552	953-37-00	MSFC	UNIV OF GEORGIA	1859
948-60-91	JSC	UNIV TEXAS-GALVESTON	3391	961-21-00	JSC	LA STATE U-BAT ROUGE	2093
948-63-82	JSC	MICHIGAN STATE UNIV	2414	961-50-00	JSC	BAYLOR UNIV-MED COL	3192
948-63-82	JSC	MISSISSIPPI STATE U	2538	961-50-00	JSC	PORTLAND STATE UNIV	3022
948-63-82	JSC	SO DAKOTA STATE UNIV	3150	961-50-00	JSC	UNIV OF HOUSTON	3300
948-63-82	JSC	UNIV OF KANSAS	2054	961-50-00	JSC	UNIV OF NEW MEXICO	2696
948-63-83	ARC	UNIV CALIF-BERKELEY	1375	961-50-00	JSC	UNIV TEX-PUB HEALTH	3406
948-63-83	ARC	UNIV CALIF-BERKELEY	1376	961-50-00	JSC	VIRGINIA POLY INST	3499
948-63-83	JSC	COLORADO SCH OF MINE	1622	961-51-00	JSC	LA STATE U-NEW ORLNS	2103
948-63-83	JSC	DARTMOUTH COLLEGE	2603	961-51-00	JSC	TEXAS A&M UNIVERSITY	3260
948-63-83	JSC	PENNSYLVANIA STATE U	3069	964-50-00	MSFC	ATHENS COLLEGE	1008
948-63-83	JSC	UNIV OF IOWA	2040	964-50-00	MSFC	CARNEGIE-MELLON UNIV	3034
948-63-83	JSC	UNIV OF NEVADA-RENO	2599	964-50-00	MSFC	UNIV ALA-HUNTSVILLE	1037
948-63-83	JSC	UNIV TEXAS-AUSTIN	3332	970-11-11	HQ	MASS INST OF TECH	2319
948-63-83	JSC	UNIV OF UTAH	3416	970-14-01	HQ	INDIANA U-BLOOMINGTN	1980
948-63-83	JSC	UNIV OF WYOMING	3604	970-14-01	HQ	STANFORD UNIVERSITY	1320
948-63-83	MSFC	NO CAROLINA STATE U	2898	970-14-01	HQ	UNIV ARKANSAS-FAYETV	1174
948-63-84	JSC	NEW YORK UNIVERSITY	2808	970-14-01	HQ	UNIV CALIF-SAN FRAN	1571
948-63-84	JSC	UNIV OF DELAWARE	1727	970-21-11	ARC	BAYLOR UNIV-MED COL	3202
948-63-84	JSC	UNIV OKLAHOMA-NORMAN	3008	970-21-11	ARC	UPPSALA UNIVERSITY	3628
948-63-85	JSC	CORNELL UNIVERSITY	2752	970-21-12	ARC	CORNELL UNIVERSITY	2777
948-63-85	JSC	PURDUE UNIVERSITY	1990	970-21-12	ARC	HOWARD UNIVERSITY	1768
948-63-85	JSC	PURDUE UNIVERSITY	1991	970-21-12	ARC	OHIO STATE UNIV	2974
948-63-85	LARC	UNIV OF DELAWARE	1724	970-21-12	ARC	STANFORD UNIVERSITY	1314
948-63-86	JSC	STANFORD UNIVERSITY	1296	970-21-12	ARC	UNIV TEXAS-GALVESTON	3393
948-63-86	JSC	UNIV OF HOUSTON	3304	970-21-12	ARC	UNIV OF WASHINGTON	3544
948-63-86	JSC	UNIV OF KANSAS	2053	970-21-13	ARC	UNIV CALIF-SAN DIEGO	1544
948-63-86	JSC	UNIV OF KANSAS	2055	970-21-14	ARC	CASE WESTERN RESERVE	2946
948-70-70	MSFC	DUDLEY OBSERVATORY	2784	970-21-14	ARC	HARVARD UNIVERSITY	2243
948-80-80	ARC	STANFORD UNIVERSITY	1267	970-21-14	ARC	ST LOUIS UNIVERSITY	2550
948-80-80	JSC	DUDLEY OBSERVATORY	2786	970-21-14	ARC	STANFORD UNIVERSITY	1334
948-80-80	JSC	NORTHWESTERN UNIV	1889	970-21-14	ARC	UNIV CALIF-BERKELEY	1429
948-80-80	JSC	UNIV TEXAS-AUSTIN	3331	970-21-14	ARC	UNIV CALIF-DAVIS	1449
948-80-80	JSC	UNIV TEXAS-DALLAS	3371	970-21-16	ARC	STANFORD UNIVERSITY	1276
948-80-81	JSC	DUDLEY OBSERVATORY	2785	970-21-16	ARC	STANFORD UNIVERSITY	1349
948-80-81	JSC	UNIV OF KANSAS	2052	970-21-25	ARC	GEORGETOWN UNIV	1766
948-80-81	JSC	UNIV OF KANSAS	2056	970-21-25	ARC	UNIV CALIF-IRVINE	1464
948-80-81	MSFC	UNIV WISC-MADISON	3574	970-21-25	ARC	UNIV CALIF-SAN FRAN	1573
948-80-82	MSFC	UNIV CALIF-BERKELEY	1383	970-21-25	ARC	UNIV WISC-MADISON	3592
948-90-95	MSFC	GEORGIA INST OF TECH	1836	970-21-25	ARC	UNIV WISC-MADISON	3595
948-90-95	MSFC	MASS INST OF TECH	2281	970-21-25	ARC	YALE UNIVERSITY	1719
948-90-95	MSFC	MASS INST OF TECH	2283	970-21-35	ARC	STANFORD UNIVERSITY	1338
948-90-95	MSFC	RENSSELAER POLY-NY	2831	970-21-35	ARC	WEST VIRGINIA UNIV	3556
948-90-95	MSFC	UNIV ALA-HUNTSVILLE	1058	970-21-45	ARC	STANFORD UNIVERSITY	1277
948-90-95	MSFC	UNIV ALA-HUNTSVILLE	1067	970-21-45	ARC	UNIV CALIF-SAN FRAN	1570
948-90-95	MSFC	UNIV ALA-TUSCALOOSA	1083	970-21-51	ARC	JOHNS HOPKINS UNIV	2138
948-90-95	MSFC	UNIV CALIF-L ANGELES	1475	970-21-51	ARC	JOHNS HOPKINS UNIV	2139
948-90-95	MSFC	UNIV OF CONNECTICUT	1693	970-21-51	ARC	STANFORD UNIVERSITY	1343
948-90-95	MSFC	UNIV OF SOUTHERN CAL	1602	970-21-52	ARC	MASS INST OF TECH	2358
948-90-95	MSFC	UNIV WISC-MADISON	3575	970-21-52	ARC	MASS INST OF TECH	2368
951-16-00	JSC	LEHIGH UNIVERSITY	3058	970-21-52	ARC	NORTHEASTERN UNIV	2384
951-16-00	JSC	UNIV OF HOUSTON	3297	970-21-52	ARC	UNIV CALIF-DAVIS	1450
951-16-00	JSC	UNIV OF HOUSTON	3316	970-21-52	ARC	UNIV CALIF-DAVIS	1452
951-16-00	JSC	UNIV OF HOUSTON	3318	970-21-52	ARC	UNIV OF FLORIDA	1803
951-16-00	JSC	UNIV OF HOUSTON	3321	970-21-52	ARC	UNIV ILLINOIS-URBANA	1962
951-16-00	MSFC	UNIV ALA-HUNTSVILLE	1038	970-21-52	ARC	UNIV MICH-ANN ARBOR	2466
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970-21-53	ARC	STANFORD UNIVERSITY	1332	970-51-12	JSC	BOSTON UNIVERSITY	2209
970-21-53	ARC	STANFORD UNIVERSITY	1347	970-51-12	JSC	TUFTS UNIVERSITY	2391
970-21-53	ARC	TRINITY UNIVERSITY	3282	970-51-12	JSC	UNIV CALIF-SAN FRAN	1572
970-21-53	ARC	UNIV CALIF-SAN DIEGO	1566	970-51-12	JSC	U TEX HEALTH CTR-SA	3398
970-21-53	ARC	UNIV OF CHICAGO	1944	970-51-12	JSC	U TEX HEALTH CTR-DAL	3396
970-21-53	ARC	UNIV OF KENTUCKY	2078	970-51-14	JSC	HARDING COLLEGE	1172
970-21-53	ARC	UNIV OF VIRGINIA	3484	970-51-14	JSC	MASS INST OF TECH	2300
970-21-61	ARC	COLORADO STATE UNIV	1626	970-51-14	JSC	TEXAS A&M UNIVERSITY	3256
970-21-61	ARC	EMORY UNIVERSITY	1822	970-51-14	JSC	U MINN-MNPLS-ST PAUL	2506
970-21-61	ARC	OHIO STATE UNIV	2956	970-51-14	JSC	UNIV MO-COLUMBIA	2554
970-21-61	ARC	RICE UNIVERSITY	3211	970-51-14	JSC	UNIV OF WASHINGTON	3530
970-21-61	ARC	UNIV CALIF-BERKELEY	1397	970-51-15	JSC	UNIV WISC-GREEN BAY	3561
970-21-61	ARC	UNIV CALIF-DAVIS	1445	970-51-15	JSC	BAYLOR UNIV-MED COL	3196
970-21-61	ARC	UNIV CALIF-DAVIS	1447	970-51-15	JSC	BAYLOR UNIV-MED COL	3200
970-21-61	ARC	UNIV CALIF-DAVIS	1455	970-51-15	JSC	LA STATE U-BAT ROUGE	2100
970-21-61	ARC	UNIV OF HAWAII	1864	970-51-15	JSC	NO TEXAS STATE UNIV	3206
970-21-61	ARC	UNIV ILLINOIS-URBANA	1968	970-51-15	JSC	UNIV ILLINOIS-CHICGO	1949
970-21-61	ARC	UNIV OF IOWA	2043	970-51-16	JSC	BAYLOR UNIV-MED COL	3190
970-21-61	ARC	UNIV MICH-ANN ARBOR	2426	970-51-16	JSC	BAYLOR UNIV-MED COL	3198
970-21-61	ARC	UNIV OF SANTA CLARA	1596	970-51-16	JSC	ST U NY-UPST MED CTR	2868
970-21-61	ARC	U TEX HEALTH CTR-DAL	3395	970-51-16	JSC	UNIV CALIF-DAVIS	1453
970-21-61	ARC	UNIV OF VIRGINIA	3467	970-51-16	JSC	UNIV OF MIAMI	1814
970-21-61	ARC	UNIV WISC-MADISON	3563	970-51-16	JSC	UNIV TEXAS-GALVESTON	3390
970-21-62	ARC	CATHOLIC UNIVERSITY	1741	970-51-16	JSC	U TEX HEALTH CTR-SA	3397
970-21-62	ARC	CORNELL UNIVERSITY	2745	970-51-25	JSC	UNIV OF CONNECTICUT	1696
970-21-62	ARC	STANFORD UNIVERSITY	1273	970-51-25	JSC	UNIV OF HOUSTON	3299
970-21-62	ARC	UNIV OF PENNSYLVANIA	3099	970-51-25	JSC	UNIV OF HOUSTON	3303
970-21-63	ARC	DUKE UNIVERSITY	2885	970-51-35	JSC	UNIV OF PENNSYLVANIA	3101
970-21-63	ARC	NO CAROLINA STATE U	2895	970-51-45	JSC	STANFORD UNIVERSITY	1355
970-21-63	ARC	UNIV OF HOUSTON	3284	970-51-45	JSC	UNIV TEX-DENTAL BRCH	3385
970-21-63	ARC	UNIV SAN FRANCISCO	1584	970-51-45	JSC	UNIV TEX-DENTAL BRCH	3386
970-22-20	ARC	CASE WESTERN RESERVE	2943	970-51-62	JSC	UNIV OF HOUSTON	3301
970-22-20	ARC	CASE WESTERN RESERVE	2945	970-51-63	JSC	COLLEGE OF WM & MARY	3436
970-22-20	ARC	UNIV MO-ROLLA	2572	970-51-63	JSC	COLORADO STATE UNIV	1645
970-22-21	ARC	MASS INST OF TECH	2367	970-51-63	JSC	NEW YORK UNIVERSITY	2812
970-22-21	ARC	UNIV CALIF-BERKELEY	1431	970-51-63	JSC	TEXAS A&M UNIVERSITY	3248
970-22-21	ARC	UNIV OF DENVER	1686	970-52-20	JSC	OLD DOMINION UNIV	3447
970-22-23	ARC	CAL STATE U-SAN JOSE	1254	970-52-21	JSC	RICE UNIVERSITY	3217
970-22-24	ARC	WORCESTER POLY INST	2409	970-52-21	JSC	UNIV MO-COLUMBIA	2555
970-22-24	ARC	WORCESTER POLY INST	2410	970-52-24	JSC	UNIV OF HOUSTON	3290
970-22-30	ARC	UNIV CALIF-BERKELEY	1428	970-52-24	JSC	U MINN-MNPLS-ST PAUL	2505
970-22-30	ARC	UNIV MO-COLUMBIA	2560	970-52-24	JSC	UNIV NEBRASKA-LINCLN	2592
970-23-20	ARC	STANFORD UNIVERSITY	1329	970-53-30	JSC	TEXAS TECH UNIV	3276
970-23-30	ARC	MT SINAI SCH OF MED	2800	970-53-30	JSC	UNIV OF KENTUCKY	2072
970-23-30	ARC	OHIO STATE UNIV	2977	970-63-10	MSFC	UNIV ALA-HUNTSVILLE	1059
970-23-30	ARC	STANFORD UNIVERSITY	1353	970-63-20	MSFC	MASS INST OF TECH	2279
970-23-30	ARC	TUFTS UNIVERSITY	2393	970-63-20	MSFC	MASS INST OF TECH	2285
970-23-30	ARC	UNIV MO-COLUMBIA	2562	970-63-20	MSFC	UNIV TENNESSEE-KNOXV	3162
970-23-30	ARC	UNIV OF SANTA CLARA	1592	970-63-20	MSFC	UNIV TENNESSEE-KNOXV	3164
970-23-30	ARC	UNIV WISC-MADISON	3584	970-63-50	MSFC	UNIV TEXAS-AUSTIN	3324
970-23-30	ARC	UNIV WISC-MADISON	3593	970-71-61	WS	COLORADO STATE UNIV	1637
970-23-30	ARC	UNIV WISC-MADISON	3597	970-71-61	WS	EMORY UNIVERSITY	1820
970-24-01	ARC	BRYN MAWR COLLEGE	3032	970-71-61	WS	UNIV CALIF-DAVIS	1459
970-24-01	ARC	COLORADO STATE UNIV	1647	970-71-61	WS	UNIV MO-COLUMBIA	2557
970-24-01	ARC	UNIV CALIF-DAVIS	1463	974-11-02	MSFC	GEORGIA INST OF TECH	1831
970-32-20	LARC	CLEMSON UNIV-CLEMSON	3134	974-11-02	MSFC	GEORGIA INST OF TECH	1834
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975-82-41	ARC	UNIV CALIF-L ANGELES	1466
975-84-00	JSC	UNIV CALIF-BERKELEY	1385
975-84-10	JSC	UNIV OF HOUSTON	3306
975-84-10	MSFC	UNIV ALA-HUNTSVILLE	1066
975-84-20	MSFC	UNIV OF ARIZONA	1130
975-84-25	HQ	CALIF INST OF TECH	1238
975-84-39	MSFC	PENNSYLVANIA STATE U	3082
975-84-39	MSFC	STANFORD UNIVERSITY	1350
975-84-39	MSFC	UNIV MICH-ANN ARBOR	2455
975-84-45	JSC	UNIV ALASKA-FAIRBNKS	1099
975-84-78	MSFC	CALIF INST OF TECH	1186
975-84-78	MSFC	MASS INST OF TECH	2284
975-84-78	MSFC	PRINCETON UNIVERSITY	2668
975-84-78	MSFC	UNIV OF ARIZONA	1131
975-90-95	MSFC	GEORGETOWN UNIV	1765
975-90-95	MSFC	LEHIGH UNIVERSITY	3050
975-90-95	MSFC	MASS INST OF TECH	2282
975-90-95	MSFC	MASS INST OF TECH	2345
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975-90-95	MSFC	STATE UNIV NY-BUFFAL	2842
975-90-95	MSFC	UNIV ALA-HUNTSVILLE	1036
975-90-95	MSFC	UNIV ALA-HUNTSVILLE	1052
975-90-95	MSFC	UNIV ALA-HUNTSVILLE	1069
975-90-95	MSFC	UNIV ALA-TUSCALOOSA	1081
975-90-95	MSFC	UNIV OF ARIZONA	1133
975-90-95	MSFC	UNIV OF SOUTHERN CAL	1603
975-90-95	MSFC	WAYNE STATE UNIV	2486
976-30-00	MSFC	CITY COLLEGE OF N Y	2710
976-30-00	MSFC	NEW YORK UNIVERSITY	2807
976-30-00	MSFC	UNIV ALA-TUSCALOOSA	1087
980-80-00	HQ	SYRACUSE UNIVERSITY	2875
981-60-10	HQ	PENNSYLVANIA STATE U	3089
982-42-00	JSC	TEXAS A&M UNIVERSITY	3250
982-42-00	JSC	TEXAS A&M UNIVERSITY	3252
982-42-00	JSC	VIRGINIA POLY INST	3500
982-52-00	MSFC	ALABAMA A&M UNIV	1001
982-52-00	MSFC	PRINCETON UNIVERSITY	2635
982-52-00	MSFC	UNIV ALA-HUNTSVILLE	1048
982-52-00	MSFC	UNIV ALA-HUNTSVILLE	1051
982-52-00	MSFC	UNIV ALA-HUNTSVILLE	1057
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982-52-00	MSFC	UNIV ALA-HUNTSVILLE	1070
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986-15-00	JSC	RICE UNIVERSITY	3230
995-40-00	JSC	CALIF INST OF TECH	1193
996-00-00	MSFC	JOHNS HOPKINS UNIV	2133
996-00-00	MSFC	UNIV ALA-HUNTSVILLE	1040
996-00-00	MSFC	UNIV CALIF-SAN DIEGO	1533
996-00-00	MSFC	UNIV OF HAWAII	1867
997-00-00	JSC	TEXAS A&I UNIVERSITY	3240
997-00-00	JSC	TEXAS A&M UNIVERSITY	3265